Global Environment Facility

Baltic Sea Regional Project

Project Implementation and Procurement Plan

Helsinki Commission (HELCOM)
International Baltic Sea Fisheries Commission (IBSFC)
International Council for the Exploration of the Sea (ICES)

World Bank

February 2002

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ABBREVIATIONS AND ACRONYMS

AAS	Agriculture Advisory Services
AC1	Assistant Coordinator for Component 1
AC	Farm and Agricultural Companies
ACFM	Advisory Committee for Fishery Management
ADW	Agriculture Demonstration Watersheds
AgECS	Agri-Environmental Credit Scheme
APL	Adaptable Program Loan
ASA	Agri-environmental Sensitive Areas
ATT	Area Task Team
AU	Animal Units
BAAP	Baltic Agriculture Run-off Action Program
Baltic 21	Baltic 21 Process for an Agenda 21 for the Baltic Sea Region
BIAS	Baltic International Acoustic Surveys
BITS	Baltic International Bottom Trawl Surveys
BMB	Baltic Marine Biologists
BSLME	Baltic Sea Large Marine Ecosystem
BSRP	Baltic Sea Regional Project
BSSG	Baltic Sea Steering Group
CAP	Code of Good Agricultural Practices
C1C	Component 1 Coordinator
C2C	Component 2 Coordinator
CAS	Country Assistance Strategy
CBSS	Council of the Baltic Sea States
CCB	Coalition Clean Baltic (regional NGO)
COBRA	Coordination Organ for Baltic Reference Areas
COMBINE	HELCOM-Cooperative Monitoring in the Baltic Marine Environment
CPUE	Catch per Unit Effort
EC	Commission of the European Communities
EMP	Environmental Management Plan
EMS	Environmental Management Systems
EU	European Union
EU (Sapard)	Special Accession Programme for Agriculture and Rural Development
EUR	Euro – European Monetary Union unit of currency
Farm E/MP	Farm Environmental/Management Plans
FIO	Farm Interest Organization
FMS	Financial Management System
GEF	Global Environment Facility
GIS	Geographic Information System
GIWA	Global International Waters Assessment
HELCOM	Helsinki Commission - Baltic Marine Environment Protection Commission
Helsinki Convention	Convention on the Protection of the Marine Environment of the Baltic Sea (1974 and 1992)
HHED	Health, Ecological and Economic Dimensions of Global Change Program

IBRD	International Bank for Reconstruction and Development
IBSFC	International Baltic Sea Fisheries Commission
ICES	International Council for the Exploration of the Sea
ICR	Implementation Completion Report
ICZM	Integrated Coastal Zone Management
JCP	Baltic Sea Joint Comprehensive Environmental Action Program (1992, 1998)
LACI	Loan Administration Change Initiative
LIU	Local Implementation Unit
LIU-CZM	Local Implementation Unit Coastal Zone Managers
LIU-ECOM	Local Implementation Unit Agri Economic Manager
LIU-ENVM	Local Implementation Unit Agri-Environment Manager
LIU-MAM	Local Implementation Unit Monitoring and Assessment Manager
LIU-TEM	Local Implementation Unit Agri-Technical Manager
LME	Large Marine Ecosystem
LPM	Local Project Managers
MARE	MISTRA's Marine Research on Eutrophication
MEP	Ministry of Environmental Protection
MISTRA	Swedish Foundation for Strategic Environmental Research
MIS	Management Information System
MLW	HELCOM-PITF-Working Group on Management Plans for Coastal Lagoons and Wetlands
MMED	Multiple Marine Ecological Disturbances
MoA	Ministry of Agriculture
MoE	Ministry of Environment
MoF	Ministry of Finance
NASCO	North Atlantic Salmon Conservation Organization
NEAFC	North East Atlantic Fisheries Commission
NOAA	National Oceanographic and Atmospheric Administration
NEFCO	Nordic Environment Finance Corporation
NGO	Non-governmental Organization
Nitrates Directive	European Union - Council Directive on the Protection of Waters Against Pollution caused by Nitrates from Agriculture (91/676/EEC)
NMR	Nordic Council of Ministers
OECD	Organization for Economic Cooperation and Development
OSPAR	Commission for the Protection of the Marine Environment of the North East Atlantic
PIP/PPP	Project Implementation Plan and Project Procurement Plan
PIT	Project Implementation Team
PITF	HELCOM - Programme Implementation Task Force
PMU	Project Management Unit (HELCOM)
PMR	Project Management Report
Project	Baltic Sea Regional Project
PY	Project Year
QA	Quality Assurance

RAN	Regional Agri- Environment Assessment Network
RAT	Regional Assessment Teams
RWB	Regional Water Management Boards
SAP	Strategic Action Program
SAP	Salmon Action Program of the IBSFC
SGBDI	ICES-Study Group on Discard and By-catch Information
SGBEAB	ICES-Study Group on the Scientific Basis for Ecosystem Advice in the Baltic
SLU	Swedish University of Agricultural Sciences
SMHI	Swedish Meteorological and Hydrological Institute
SOOPs	Ships of Opportunity
STAP	Scientific and Technical Advisory Panel of the Global Environment Facility
SUCOZOMA	Sustainable Coastal Zone Management (funded by MISTRA)
TAC	Total Allowable Catch
ToR	Terms of Reference
TBD	To be determined
UNDP	United Nations Development Programme
UN/ECE	United Nations Economic Commission for Europe
VASAB 2010	Visions and Strategies Around the Baltic 2010
WGBFAS	ICES-Baltic Sea Fisheries Assessment Working Group
WWF	World Wide Fund for Nature

I. THE PROJECT – PROJECT DESCRIPTION AND APPROACH

A. INTRODUCTION

1. *Introduction.* Continued degradation of the Baltic Sea ecosystem has affected water quality, modified biodiversity, and impacted regional fisheries. The Baltic Sea is now an ecosystem under extreme stress. In response to this situation, the countries in the drainage basin initiated a Joint Comprehensive Environmental Action Program for the Baltic Sea (JCP). The JCP, as adopted in 1992, strengthened and updated in 1998, constitutes a "Strategic Action Plan" for the Baltic Sea region. The JCP provides the basis for the Project, which is fully consistent with Global Environment Facility (GEF) Operational Program Number 9 (OP-9), "Integrated Land and Water Multiple Focal Area Operational Program."[1] The objective of OP-9 is to support "better land and water resource management practices on an area wide basis." In addition, the Project provides opportunities for the GEF to be a "catalyst for action to bring about the successful integration of improved land and water resource management practices on an area wide basis while providing preventive measures to address threats rather than remedial measures."

2. The GEF Council approved the Project Brief for the Baltic Sea Regional Project May 1998; a Project Appraisal Document was submitted to the GEF Secretariat January 31, 2001, and approved March 9, 2001. To address the need for an ecosystem-based approach to resource management, the Baltic Sea Regional Project (BSRP) is designed within the principles of the Large Marine Ecosystem (LME) concept, focusing on land-based, coastal zone, and marine activities including activities for improving ecosystem health and productivity, social and economic development, and provision of ecosystem management tools for decision-makers to address transboundary issues for the Baltic Sea. The most important aspects of the Project are its linkages between land-based activities, coastal zones and marine environments.

3. *Cooperating Parties*. With the support of the GEF, and the World Bank, Project activities will assist the recipient countries in implementing elements of the JCP, and support Estonia, Latvia, Lithuania, Poland, and Russian Federation in meeting their obligations to the Helsinki Convention and other international agreements; and national policies and legislation. The Project provides the basis for strengthening cooperation between the three international bodies—the Helsinki Commission (HELCOM), the International Baltic Sea Fisheries Commission (IBSFC) and the International Council for the Exploration of the Sea (ICES)—recipient country counterparts and other cooperating organizations, Nordic Environment Finance Corporation (NEFCO), World Wild Fund for Nature (WWF), and Baltic21. Preparation of the Project has been coordinated with the Rural Environmental Protection Project in Poland, and the Global International Waters Assessment (GIWA), which are both supported by GEF.

B. PROJECT DESCRIPTION

4. *Development Objective.* The development objective of the Baltic Sea Regional Project (BSRP) is to facilitate the increase of biological productivity, improve coastal zone management and reduce agricultural non-point source pollution through the introduction of ecosystem-based approaches for land, coastal and marine environmental management. The Project's long-term goal is to provide the three Baltic Sea cooperating international bodies and the recipient countries with management tools for sustainable agricultural, coastal and marine management, while improving the social and economic benefits of the farming, coastal and fishing communities.

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1 Global Environment Facility (April 1997). GEF Operational Programs.

5. *Baltic Sea Regional Project.* The long-term objective of the Baltic Sea Regional Project (BSRP) is to introduce ecosystem-based assessments to strengthen the management of Baltic Sea coastal and marine environments through regional cooperation and targeted transboundary coastal, marine and watershed activities. To achieve this, the three international bodies and the cooperating countries in the region will utilize project-developed management tools for sustainable ecosystem management to contribute to the improvements in the social and economic benefits of the ecosystem for the coastal fishing and farming communities in the recipient countries. The aim is to reduce impacts from non-point sources of pollution and to increase sustainable biological production. The Project provides an environmental management framework for long-term restoration of the ecological balance of the Baltic Sea ecosystem through a series of preventive and curative actions to be undertaken in a phased manner in the region. Figure 1 is a schematic illustrating the Project's integrated land-coastal-open sea activities and implementation process. The Project provides a regional focus, involving local communities and stakeholders; its biodiversity considerations focus on "prevention of damage to threatened waters." As part of an integrated approach, Project activities will support linkages with activities of the cooperating countries, international financial institutions, European Union, bilateral donors and NGOs.

6. *Project Components***.** The Project has four inter-related components based on the Large Marine Ecosystem (LME) concept and includes integrated land, coastal and marine activities to strengthen the local and regional capacity to achieve sustainable ecosystem management of the Baltic Sea resources. Sustainable management will improve ecosystem health while providing social and economic benefits to farming, coastal and fishing communities and sectors such as businesses and tourism.

7. Component 1, managed by ICES, aims to (a) introduce ecosystem-based assessments and management for the Baltic Sea; (b) coordinate and integrate the regional monitoring and assessment capacity; (c) improve management practices to increase and sustain fishery yields and biological productivity of the Baltic Sea Large Marine Ecosystem (LME); and (d) in the long-term, improve both the marine ecosystem and the economic benefits and standard of living of the fishing and coastal communities.

8. Component 2, managed by HELCOM in conjunction with the Swedish University of Agricultural Sciences (SLU), building on the Swedish funded Baltic Agricultural Run-off Action Program (BAAP) activities, aims to (a) increase awareness of environmental issues related to agriculture among farmers and communities; (b) invest in and implement environmentally responsible farm management practices, (c) in the long-term, improve the economic welfare and standard of living within the farming community while reducing non-point source agricultural impacts; and (d) the World Wide Fund for Nature (WWF) will also coordinate a series of activities that will support community-based coastal zone management activities.

9. Component 3, managed by the Project Implementation Team supervised by the Baltic Sea steering Group, aims to support local and regional capacity building and institutional strengthening.

10. Component 4 includes the project management activities.

11. *Geographic Coverage.* The regional project encompasses the Baltic Sea watershed and marine waters (see Map IBRD 31061), but activities are concentrated in targeted demonstration sites in the watershed, coastal, and marine areas (see Maps 31062 and 31063). The land-based demonstration sites target geographic areas vulnerable to pollution from nitrates and build on

previous BAAP-supported work. The activities in coastal areas benefit from earlier work by the WWF, and the marine sites correspond to and supplement the current HELCOM/ICES monitoring network.

C. PROJECT ORGANIZATION AND IMPLEMENTATION

12. *Organization of PIP/PPP Document.* The Project Implementation and Procurement Plan (PIP/PPP) provides a project management and operational framework for all stakeholders involved in implementing the Project. The PIP/PPP serves as the main reference document to be used for operational purposes detailing every aspect of project activities and budget, and assures compatibility and integrity between the proposed activities.

Project Implementation and Procurement Plan

Section I
Project Description and Approach
- Provides and introduction to the project design and approach to implementation

Section II
Institutional Arrangements and Project Administration
- Provides an overview of the Project's management and administrative organization, the Project Management is detailed in the Component 4 description

Section III
Project Implementation-Component Activities
- Outlines the Component activities, and sub-activities, detailing the individual tasks for sub-activity implementation

Section IV
Project Procurement Plan
- Introduces the budgetary elements of the project to include the procurement and implementation schedule

Section V
Monitoring and Evaluation Plan
- Provides the key performance indicators for progress towards achieving the project objective, and performance triggers to move from one phase to the next

Annexes

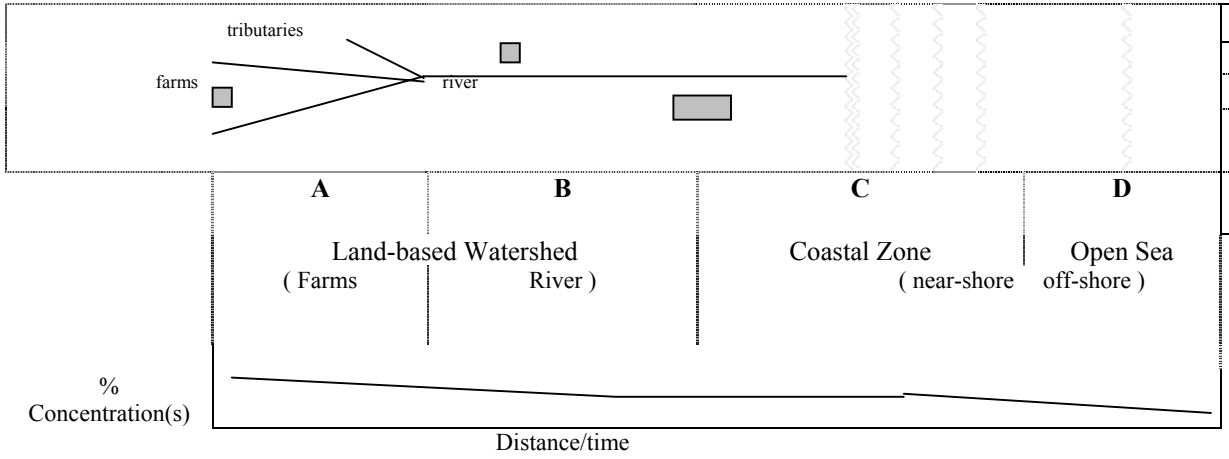
- Annexes referred to in the PIP/PPP generally include the Terms of Reference for scope of services for project implementation

Maps
- Project reference maps

13. *Justification of Project Design.* The Project represents a strategic choice to concentrate human and financial resources to strengthen regional management within the marine and agriculture sectors, using local skills and decision-making resources, to achieve sustainable ecosystem management over the medium and long term. It also includes measures to support coastal zone management, which is a critical link between land and marine environments. Component 1 addresses the marine ecosystem sector and supports a coordinated approach to monitoring and assessment of coastal and marine resources, improving fisheries management practices, and strengthening of regional decision making. Component 2 addresses the integrated agricultural run-off management and supports monitoring and assessment of land-based inputs to the marine and coastal ecosystem, investing in environmentally responsible agricultural practices, and strengthening national and regional capacity for integrated management. This component includes targeted activities for coastal zone management that are in the areas influenced by the agricultural demonstration sites. Component 3 provides support for institutional strengthening and capacity building measures that are necessary for implementation of the ecosystem management approach promoted by the Project.

14. *Project Implementation Process.* The implementation process is based on a decentralized approach that combines regional and national level coordination with local level implementation. Primary responsibility for Project management will rest with HELCOM, which will serve as the executing agency for the Project and will undertake this work in full coordination with IBSFC and ICES. A small Project Implementation Team (PIT) will be established. The institutional arrangements for component implementation are detailed in the section below.

Figure 1. Schematic of GEF - Baltic Sea Regional Project



ZONE	Geographic Setting	Jurisdiction
A	Farm	Local & National
B	Rivers	Local & National
C	Coastal Zone: Land and Water Interface	National and International
D	Open-Sea	National and International

Integrated Component Actions

	River	Coastal	Open Sea
[1] Environmentally responsible agricultural practices	[3] Upstream wetland restoration for nutrient retention	[4] Coastal wetland restoration [5] Coastal waters habitat restoration	
[2] Farm investments		[6] Community based coastal demonstration activities	
	[7] Salmon river restoration		
environmental health parameters	[9] Collect and evaluate parameters environmental health parameters, productivity, and coastal fish stock	[10] Collect and evaluate parameters environmental health parameters, productivity, and open sea fish stock	
sustainable agriculture		[11b] Technical Coordination Centers for ecosystem parameters	

Footnotes to Integrated Actions

1. introduce environmentally friendly agricultural practices on individual farms aim to reduce non-point source (nutrient) run-off from demonstration farms in watershed

2. prepare farm investment and management plans for small scale farm investments

3. restore selected upstream wetland for nutrient retention to correspond with coastal and salmon fisheries activities

4. restore selected coastal wetlands to improve nutrient retention

5. engage coastal communities to build local capacity and improve economic welfare through targeted activities

6. improve links between the riverine, coastal and marine ecosystems by restoring selected salmon rivers

7. monitor and assess in-stream data to evaluate effects of nutrient reduction strategies

8. monitor and assess the impacts of nutrients and contaminants on coastal fisheries and habitats

9. conduct joint and integrated off-shore monitoring surveys to evaluate changes in species composition and biodiversity

10a. strengthen technical and institutional capacity of Agricultural Advisory Services (AAS)

10b. strengthen technical and coordination capacity of the Coordination Centers

11. demonstrate to the fishermen, farmers and other members of coastal communities the cost efficiency of environmentally sound economic practices

12. develop and recommend ecosystem based management tools and methodologies for a sustainable Baltic Sea ecosystem

II. INSTITUTIONAL ARRANGEMENTS AND PROJECT ADMINSTRATION

A. PROJECT ADMINISTRATION

15. *Project Management and Implementation*. HELCOM will serve as the executing agency for the Project and will undertake this work in full coordination with IBSFC and ICES. The Project will employ a Financial Officer based at HELCOM and he/she will be assisted by a procurement consultant to support procurement and disbursement actions. The Financial Officer will work closely with the Component Coordinators, Component 1 Assistant Coordinator and the Managers of the Local Implementation Units. The Component Coordinators will be responsible for supervising the implementation of component activities. The BSRP Component 4 - Project Management section details the project management responsibilities, and Annex 7, Terms of Reference for Project Management and Implementation, provides Terms of Reference (ToRs) for individual management responsibilities.

16. *Project Coordination.* The BSRP Core Group[2], which supported the Project preparation, will be transformed into a Baltic Sea Steering Group (BSSG), which will provide broad-based collaboration and coordination during the implementation process. Within Annex 7, Attachment 12 outlines the Bylaws for the Baltic Sea Steering Group (BSSG), the regional coordinating and advisory group.

17. *Administrative Arrangements*. An overview of the Projects administrative procedures and financial management and disbursement process is provided in Table 1, Overview of Administrative Procedures and detailed in sections, of the PIP/PPP. Table 2, Project Administrative Framework illustrates the Project's administrative structure for project implementation.

B. AGREEMENTS BETWEEN PARTNERS

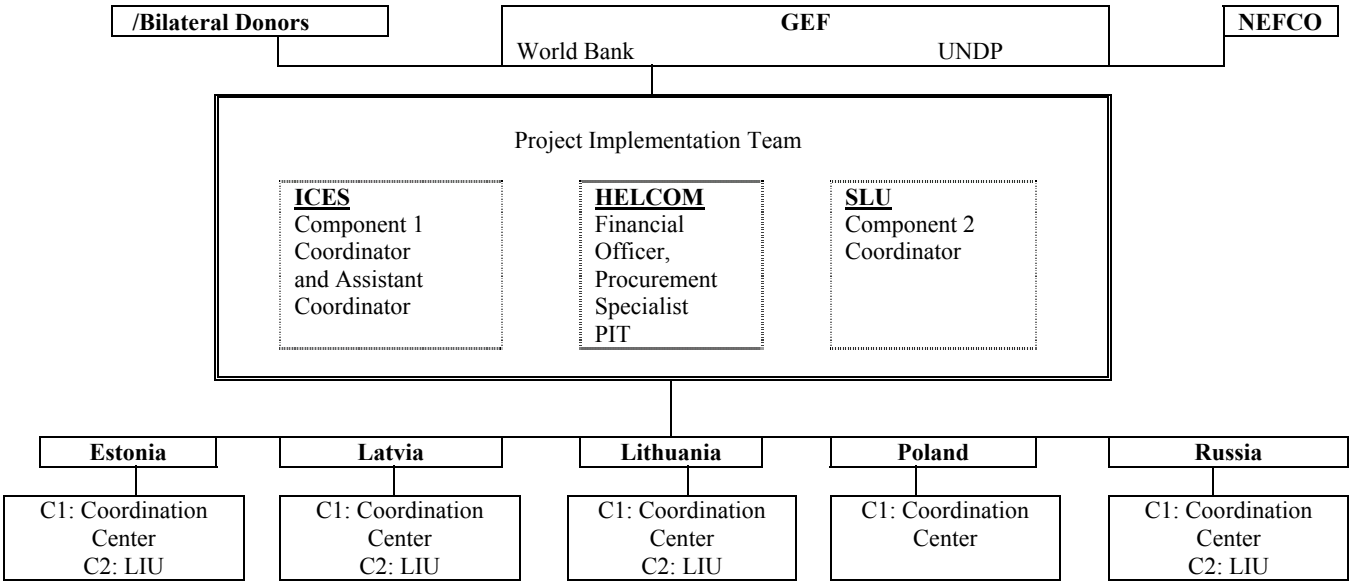
18. An agreement between the Implementing Agency (World Bank) and Executing Agency (HELCOM) has been prepared.

[2] Core Group participants include: HELCOM, IBSFC, ICES, Baltic 21, UNDP, World Bank, NOAA and WWF.

Table 1. Overview of Administrative Procedures

Administrative Procedure	Responsibility and Reference
Project Participants	
HELCOM	Executing Agency; PIT, International Coordinating Body (Annex 7, Attachment 2)
ICES	International Coordinating Body, Component 1 Coordinator (Annex 7, Attachment 6)
IBSFC	International Coordinating Body, Component 1 participant (Annex 7)
Baltic Sea Steering Group	Regional advisory body for BSRP (Annex 7, Attachment 12)
World Bank	Co-Implementing Agency
UNDP	Co-Implementing Agency (Phases 2 and 3)
SLU	Component 2 Coordinator (Annex 7, Attachment 8)
WWF	Refer to Annex 7
Legal Status and Constitution	
Grant Agreement	An agreement between the Implementing Agency (World Bank) and Executing Agency (HELCOM) has been prepared.
Project Implementation	
Project Implementation	The 2 year (Phase 1) Project will be implemented in 2002-2004
Project Reporting	PIT (refer to Annex 7, Attachment 3)
Project Supervision	World Bank and NEFCO
Procurement and Disbursement	
LACI	Financial management system as required by the Bank under OP/BP 10.02.
Procurement and Disbursement	Project Procurement and Disbursement (refer to Section IV)
Allocation of Loan Proceeds	Disbursements shall be made against the categories of expenditures indicated in the Procurement Plan
Flow of Funds	Disbursement of funds provided by the GEF will be made by transfers into a Special Account, held with a reputable bank, acceptable to the financiers
Financial Management	As required by the Bank/IDA under OP/BP 10.02
External Audit	Annual audits performed by Finnish firm currently auditing HELCOM
Management Information System	Established by the PIT

Table 2. Project Administrative Structure



III. PROJECT COMPONENT ACTIVITIES

A. COMPONENT 1 – LARGE MARINE ECOSYSTEM ACTIVITIES

19. *Introduction to Component 1.* The International Council for the Exploration of the Sea (ICES) is an intergovernmental marine science organization which, since its foundation in 1902, has consistently recognized the mutual interdependence of the living marine resources and their physical and chemical environment. Although the Council's original statutes have undergone occasional modification to adjust for changing conditions, challenges, and priorities, its main focus has continued to be on international cooperative studies. ICES is a leading forum for the promotion and coordination of research, and dissemination of research findings on the physical, chemical, and biological systems in the North Atlantic, including the Baltic Sea. ICES also provides advice on human impact on the North Atlantic environment, in particular fisheries effects in the Northeast Atlantic and the Baltic. In support of these activities, ICES facilitates data and information exchange through publications and meetings, in addition to functioning as a marine data center for oceanographic, environmental, and fisheries data. ICES works with experts from its 19 member countries and collaborates with more than 40 international organizations throughout the world, some of which hold scientific observer status.

20. Since the 1970s, a major task for ICES has involved the provision of scientific information and advice in response to requests by international and regional regulatory commissions,[3] and the governments of its Member Countries,[4] for purposes of fisheries conservation and the protection of the marine environment. This advice is first reviewed by the Advisory Committee on Fishery Management, (ACFM), the Advisory Committee on the Marine Environment, (ACME), or the Advisory Committee on Ecosystems (ACE). ACE was recently established in order to meet the increasing need for advice on the ecosystem level.

21. ICES has been charged with the preparation and coordination of the BSRP Component 1 Baltic Sea Large Marine Ecosystem Activities. Successful management of the Baltic Sea in a sustainable manner will rely on the quality and quantity of the data collected, and the knowledge obtained concerning the status of its living resources and their ecosystem. A rational and cost-effective way of achieving this is to adopt the Large Marine Ecosystem (LME) assessment and management approach. While a wealth of information has been gathered about the Baltic Sea ecosystem over decades, there is also an intensive need to collate, coordinate, use and implement the existing information at a local as well as at a regional level. During the preparatory phase of Component 1 of the BSRP a series of consultations, working group meetings and workshops were held both with the managing organizations of the Baltic Sea and its watershed area as well as with institutes and ministries in the five recipient countries. It then became obvious that due to historical reasons Estonia, Latvia Lithuania, Russia and Poland, have difficulties in fully meeting a series of commitments and/or recommendations to collect data and achieve results which would be used in management decisions, nationally as well as internationally. Thus, additional collection of data within Component 1 of the BSRP is aimed at filling the most serious gaps in these areas.

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3 Baltic Marine Environment Protection Commission (HELCOM), International Baltic Sea Fishery Commission (IBSFC), Commission of the European Communities (EC), Commission for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), North Atlantic Salmon Conservation Organization (NASCO), North East Atlantic Fisheries Commission (NEAFC)

4 Belgium, Canada, Denmark, Estonia, Finland, France, Germany, Iceland, Ireland, Latvia, Netherlands, Norway, Poland, Portugal, Russia, Spain, Sweden, USA, United Kingdom.

22. During project preparation a number of priorities in selecting the most cost-efficient activities and ways to improve data collection, assessments and capacity-building in the recipient countries were identified and analyzed. Based on the five module LME assessment and management concept, which forms the basis for the BSRP, priority activities were assigned into the following four modules: 1) Productivity, 2) Pollution and Ecosystem Health, 3) Fish and Fisheries, and 4) Socio-economics. These activities form the information framework for the final module that is focused on 5) Governance and Management activities required to improve the long-term sustainable benefits to be derived from the Baltic Sea LME.

23. There is a general agreement in the region that there are three major threats to the Baltic Sea LME. These are (a) eutrophication, which to a great extent is caused by nutrient run-off from agricultural activities; (b) contaminant loading, which is mainly caused by industrial, agricultural and municipal activities; and (c) overexploitation of the living marine resources, mainly caused by non-sustainable use of these resources. The activities within Component 1 will address all three issues.

24. *Component Objectives*. The Component 1 aims to:

- Strengthen institutional and technical capacity thereby improving national and standardized regional cooperation and coordination.

- Expand the geographic coverage and improve the integration of open sea and near shore activities in the eastern Baltic Sea to fill the gaps in the current ICES monitoring network for both fisheries and environmental conditions, as mandated by ICES and HELCOM.

- Provide a tested set of indicators for assessing ecosystem recoveries related to improved agricultural practices.

- Improve the quality of temporal and spatial coverage of hydrography and productivity monitoring and assessment of plankton, especially in relation to fish.

- In a cost effective way monitor and assess changes in the plankton communities and of environmental parameters by using the Ships of Opportunity.

- Support and coordinate simultaneous acoustic surveys in the near shore (cutters) and open sea (research vessels) areas.

- Prepare to start implementing selected recommendations of the IBSFC Salmon Action Plan.

- Enhance the local assessment capacity through improved technical resources and capacity building.

- Introduce application of methodologies allowing to assess multiple marine ecological disturbances in the Baltic Sea

- Contribute to the development of integrated models for environmental and fisheries management to support the decision making capacity for integrated coastal resource management.

- Develop innovative methodologies to be used for land-coastal-and open sea assessments to promote sustainable ecosystem based management actions to improve the economic benefits from the living marine resources of the Baltic Sea LME.

- Conduct a workshop on promoting the use of Baltic herring and sprat for human consumption.

25. *General Geographic Context.* The coastal near shore activities and monitoring network will be integrated with land based coastal and associated demonstration activities in selected basins as noted in maps IBRD 31062, IBRD 31063. Open sea monitoring will include the current ICES network; which includes ICES Subdivisions 25, 26, 28, 29S and 32. These areas include the Baltic Proper (the sea east of Bornholm) and the Gulf of Finland. The economic zones of the recipient countries are part of these Subdivisions. Specific geographic sites are detailed in the activity descriptions.

26. *Participants*. The Component 1 participants include the Coordination Centers and Lead Laboratories for this Component and the technical institutes that have been engaged in ICES and/or HELCOM activities. The participants will also include institutes, technical specialists and stakeholders, who are identified in the Activities and Sub-activities. Specifically the local participants include:

27. GEF Recipient Countries

- Estonia: Estonian Marine Institute, Tallinn, Tartu University, Tartu,

- Latvia: Latvian Fisheries Research Institute, Riga, Institute of Aquatic Ecology, University of Latvia, Riga,

- Lithuania: Marine Research Center, Vilnius; Coastal Research and Planning Institute, Klaipeda, Fisheries Research Laboratory, Klaipeda, Institute of Ecology, Vilnius,

- Russia: Atlantic Research Institute of Fisheries and Oceanography (AtlantNIRO), Kaliningrad, P.P. Shirshov Institute of Oceanology, Kaliningrad, V. G. Khlopin Radium Institute, St. Petersburg, and Zoological Institute, St. Petersburg

- Poland: Sea Fisheries Institute, Gdynia, Institute of Meteorology and Water Management, Gdynia

28. Other Cooperating Countries

- Denmark: Danish Institute for Fisheries Research, Copenhagen,

- Finland: Finnish Institute of Marine Research, Helsinki,

- Germany: Baltic Sea Research Institute, Warnemünde, Institute for the Baltic Sea Fisheries, Rostock, Institute for Marine Research, Kiel,

- Sweden: Institute of Marine Research, Lysekil, Institute of Coastal Research, Öregrund, Swedish Meteorological and Hydrological Institute, Norrköping, Department of Earth Sciences, Uppsala University, Uppsala

29. In addition, appropriate specialists or organizations will be engaged on consultancy basis.

30. *Approach.* One of the unique features of the BSRP project is that the Baltic LME is considered to consist of both the Baltic Sea *per se* as well as its watershed area which is four times larger than the Baltic Sea itself. This makes the linkage of the "Baltic Sea LME Activities" component with the Project's second component, "Land and Coastal Management Activities" not only logical but also natural and essential. The coastal zone is a sensitive transboundary water area heavily affected by anthropogenic and/or natural activities and phenomena that are land-based, and also influenced by coastal and offshore human activities. Excessive nutrient and pollution loads from agriculture and industrial activities are causing increasing eutrophication and contamination in the coastal waters, thus reducing their biodiversity and damaging habitats. Overfishing of a stock or disturbance of a key spawning area or nursery ground may have detrimental effects not only in the coastal area but also for the region sharing these common resources.

31. Effective joint protection of the fish, the related biota based on cooperative international stock assessments and management is an important action to be taken by the countries bordering the Baltic Sea LME. Through improved management practices, a better sense of ownership and remediation measures for the recovery of depleted fishery resources and damaged habitats can be achieved, whether in the coastal area or in the open sea. At present, the eastern Baltic countries do not have the capacity to conduct the spatial and temporal fish stock and ecosystem health or pollution impact surveys with the necessary frequency and advanced sampling systems to produce sound scientifically-based annual assessments of the BSLME, and the quality and health of their coastal and open sea waters.

32. Recent changes in the species composition of fish catches coupled with degraded water quality and health of the ecosystem have resulted in significant losses in the total economic value of both the coastal and the offshore fisheries. This shift in the population structure of the dominant fish species has had an impact on the entire Baltic Sea ecosystem, its productivity, and its potential for supporting sustainable biomass yields and coastal fishing communities. There is a strong unfulfilled need among the 5 eastern Baltic countries for conducting appropriate spatial and temporal surveys and assessments in coastal and offshore areas for information needed to implement sustainable ecosystem-based management practices. These practices should be based on joint analyses of survey results, modeling, socioeconomic benefit/loss considerations, and carrying capacity.

33. The BSRP Large Marine Ecosystem Activities are a series of coastal, near-shore and off-shore monitoring and assessment operations within the land-coastal-open sea interface, that are conducted to provide background information on the state of the environment and its living resources based on the ecosystem approach to facilitate improved and sustainable management. The framework of Component 1 is the first serious large scale attempt to balance the long-term carrying capacity of the Baltic Sea with maximizing the sustainability of ecosystem health, biomass yields and socioeconomic benefits and to assess and mitigate the effects of agricultural non-point source runoff of nutrients and the problems this causes in rivers and lagoons as well as in the near-shore and off-shore areas. Some of the Component 1 activities will build on and benefit from existing programs, while other elements will fill gaps of information needed for equitable assessments for the eastern Baltic countries. For practical implementation purposes, especially limitations in the use of large research vessels, the effort has been divided into two geographical areas, the offshore or open sea areas and the coastal or near-shore areas. In offshore areas the data will be collected by standard ocean-going research vessels and ships of opportunity. In shallow (less than 30 meters) near-shore areas commercial cutters and open boats

will be contracted for monitoring and assessment activities. There will be a consistent, standardized set of parameters for making the evaluations and assessments in both areas.

34. The coastal waters of the Baltic are impacted by land-based inputs of nutrients and toxic substances. The fish stocks in the Baltic LME suffer from damage to recruitment areas caused by pollution, and overfishing. Furthermore, basin-wide eutrophication has changed the feeding conditions for both the open sea and the coastal fish species. The project will increase the capacity of the eastern Baltic countries to improve assessment and management practices and thus achieve significantly greater long-term socio-economic benefits from Baltic fish and fisheries than is presently realized. This will be achieved through a combined effort among the countries of the region to improve the health of coastal waters and implement fish stock rebuilding activities.

35. The project works within the current ICES, HELCOM, and IBSFC framework. Improved management of fish stocks is a major issue for Baltic 21, and has been elaborated further in the IBSFC sector report for fisheries. Action plans have been or are being developed for determining the optimal levels of Total Allowable Catches (TACs) for the open sea Baltic fish species salmon, cod, sprat and herring. Coastal commercial fish stocks, however, also need to be monitored and assessed, and their management adapted to achieve the long-term sustainability of Baltic Sea fish and fisheries.

36. Component 1 has as a primary goal the introduction of an ecosystem-based approach to the assessment and management of the Baltic Sea and to develop the technical, scientific, and local capacity in the eastern Baltic recipient countries to participate fully with western Baltic countries in improving the long-term sustainability of the health, biomass yields, and socioeconomic benefits of the BSLME. Joint monitoring, assessment, and demonstration activities will provide incentives to improve the socio-economic well being of targeted communities. To achieve this, the local institutional and technical capacities to collect data will be strengthened. Integrated monitoring and assessment activities will use the information to make sound management decisions in support of sustainable long-term resource use. An overall goal of the project is to demonstrate to the recipient countries' national authorities, managers and stakeholders that the activities and management tools applied during the project are sustainable, cost-effective and beneficial for their countries and coastal communities.

37. The BSRP will assist the GEF grant recipient countries in filling the spatial and temporal data gaps in order they will be able to fulfill their obligations to HELCOM and ICES. It will also facilitate recipient country participation in relevant regional workshops, conferences and exchange programs. Strong emphasis will be placed on coordination and cooperation to build local capacity, and on supporting data collection and assessment processes for making sound ecosystem-based management decisions. The institutional capacity will be strengthened by creating the Component 1 Coordination Centers in each of recipient countries. The Coordination Centers will be supported by selected Lead Laboratories specializing in particular fields of research. This arrangement would facilitate the cross-border integration of national scientific institutes, thus allowing to(i) harmonize the sampling and assessment techniques, (ii) adjust the reporting procedures, (iii) to rationalize use of laboratory and monitoring equipment, and (iv) to provide for cost effective quality assurance.

38. For the same reasons, the series of activities and tasks are organized within the framework of the LME modules which are specified above in the text. Thus, the open sea and coastal monitoring and assessment concept is primarily built into the three modules that represent the most important issues for managing environmental impacts and sustainable fisheries (Table

3). Consequently, the *Fish and Fisheries* module includes commercial fish and fisheries in the open-sea, commercial and recreational fish and fisheries in coastal areas, and issues related to mitigation of over-fishing. The *Productivity* module includes assessments of both primary as well as secondary pelagic production and the hydrographic conditions influencing them. In the third module, *Pollution and Ecosystem Health*, the reaction of near-shore ecotones to coastal eutrophication and to chemical pollution will be assessed by monitoring and assessing phytobenthic and fish communities. This module will also include similar activities in the open sea. All these data will be input in a summarized form into a fourth, *Socio-economic,* module. Data from these activities will also be relevant in relation to biodiversity issues, and to determine the best business practices to achieve the long-term socio-economic benefits for the people of the region.

39. *Component 1 Activities and Sub-activities*. Component 1 consists of the following Activities and sub-activities:

- Activity 1 Strengthening Institutional and Technical Capacity for Ecosystem Management:
    - ◊ Sub-activity 1(a) Strengthen Institutional Capacity of Coordination Centers and Lead Laboratories.
    - ◊ Sub-activity 1(b) Conduct Regional Training and Workshops to Strengthen Technical Capacity of Coordination Centers and Lead Laboratories.
    - ◊ Sub-activity 1(c) Coordinate Near Shore Activities.
    - ◊ Sub-activity 1(d) Coordinate Open Sea Activities.
- Activity 2 Operationalize Ecosystem Monitoring and Assessment Surveys in the eastern Baltic Sea:
    - ◊ Sub-activity 2(a) Conduct Near-shore Monitoring and Assessment Surveys.
    - ◊ Sub-activity 2(b) Conduct Joint Integrated Open Sea Surveys.
    - ◊ Sub-activity 2(c) Collect Data by using the Ships of Opportunity
    - ◊ Sub-activity 2(d) Collect Data from Commercial Fishing Vessels.
- Activity 3 Cooperative Local and Regional Evaluations and Assessments:
    - ◊ Sub-activity 3(a) Evaluate and Assess Component 1 Information.
- Activity 4 Demonstration Activities:
    - ◊ Sub-activity 4(a) Salmon River Restoration.
    - ◊ Sub-activity 4(b) To introduce and operationalize the MMED monitoring and assessment system
    - ◊ Sub-activity 4(c) Coastal zone management in selected lagoons and wetlands.

◊ Sub-activity 4(d) Workshop on promoting the use of Baltic Herring and Sprat for Human Consumption

Table 3. Component 1 Near-Shore and Open Sea Module Framework for Coordinated and Integrated Monitoring

Monitoring Module	Near-Shore	Open-Sea
Commercial Fish		
Objective	Sustainable fisheries	Sustainable fisheries
Species	Pike, perch, pike perch, sprat, herring, cod, flounder, salmon and sea trout	Cod, herring, sprat, flounder,
Parameters	Fish stock abundance, condition, age	Fish stock abundance, condition, age
Associated Database	ICES Fish Database, COBRA database	ICES Fish Database
Vessels used for monitoring	Commercial fishing cutters and small boats	Research vessels
Techniques used	Near-shore test fishing with nets and fykes, collection of samples for age, mortality and recruitment analyses. Sampling of commercial catches. Systematic Trawl Surveys for comparison with offshore monitoring. Fishery statistics	Commercial Fishery statistics and collection of samples for weight, length, age. Abundance Surveys using trawls Pelagic fish surveys using acoustic methods
QA support	Lead laboratory, consultant	Lead laboratory
Reference	Will use ICES and HELCOM Guidelines	ICES Guidelines for BITS and BIAS (ICES Doc. CM 2000/H:2)
Productivity		
Objective	Develop indicators to determine eutrophication	Develop indicators to determine eutrophication
Species	Zooplankton, phytoplankton	Zooplankton, phytoplankton
Parameters	Abundance, species composition	Abundance, species composition
Supporting data	Temperature, salinity, nutrients	Temperature, salinity, nutrients
Associated Database	Algaline Database ICES Oceanography, Biology and Contaminant Databases	Algaline Database ICES Oceanography, Biology and Contaminant Databases
Vessels Used	Small cutter, ships of opportunity	Research Vessels (as noted above), and ships of opportunity
Techniques Used	-Plankton Samplers, Bongol Nets, Mick Trawl;	-Plankton Samplers, Bongo Nets, Mick Trawl; -Continuous Plankton Recorders on ships of opportunity
QA support	Lead laboratory	Lead laboratory
Reference	ICES HELCOM standardized guidelines	ICES HELCOM standardized guidelines
Ecosystem health		
Objective	Develop improved indicators for assessing impacts of coastal eutrophication and contamination	Develop indicators, in coordination with EEA, of open-sea contamination
Phytobenthos		Not applicable in open sea
Species	Sub-merged aquatics plant species	N/A
Parameters	Coverage, depth penetration, species composition, nutrient balance in brown algae	N/A
Supporting data	Temperature, salinity, nutrient concentrations	N/A
Associated Database	Framework for a database will be set	N/A
Vessels Used	Boat for divers	N/A
Techniques Used	divers will videotape the sea floor and collect samples	N/A
QA support	Lead laboratory, consultant	N/A
Reference	TBD	N/A
Environmental Health Assessment		
Objectives	Detect and analyze impacts of eutrophication and contamination on near-shore ecosystems, evaluate	Detect and analyze impacts of contamination on open-sea fish, evaluate

Monitoring Module	Near-Shore	Open-Sea
	secondary impacts on fisheries	secondary impacts on fisheries
Data	Phytobenthos and fish monitoring data, hydrographic data	Fish monitoring data
Associated Databases	COBRA-Database, HELCOM-ICES databases	HELCOM ICES databases
Responsible institutes	Coordination centers	Coordination centers
Commercial Fish Assessment		
Objectives	To reach sustainable and environmentally acceptable fisheries	To reach sustainable and environmentally acceptable fisheries
Data	Stock abundances, population characteristics, fishery statistics, indicators of sustainability	Stock abundances, population characteristics, fishery statistics, indicators of sustainability
Associated databases	COBRA, ICES databases	ICES databases
Responsible institutes	Coordination centers	Coordination centers

Activity 1. Strengthen Institutional and Technical Capacity

40. *Introduction to Activity 1.* Component 1 requires systematic organization to be effective. The success of the project implementation will depend on effective coordination and integration and on the ability to fill significant gaps within the existing monitoring and assessment programs in the Baltic Sea for successful and cost-effective outcomes. Care must be taken to avoid duplication and to reduce redundancy. The sub-activities of Activity 1 are intended to promote coordination, through information and strengthened networks, building on local technical and institutional capacity, and establishment of an effective framework for implementation. Selected institutes (Coordination Centers) will be engaged to coordinate activities within each of the LME modules, and a GIS-Data center will be established for the coordination of data compiling and assessments in a GIS format. The coordination centers will be supported by lead laboratories responsible for more specific monitoring and assessment activities. Coordination centers and lead laboratories will meet QA requirements (ICES obligations), including qualified specialists involved in data collection, evaluations and assessments and reporting on the survey results. There is a need to enhance technical capacity with upgrades of equipment, for which these laboratories will be the primary coordinators.

41. *Objective.* The objective of this sub-activity is to strengthen technical capacity and promote coordination and cooperation, while providing an opportunity for a rationalized and standardized approach to meet ICES as well as EU requirements.

42. *Geographic Context, Coordination Centers and Lead Laboratories.* Though facilities will be upgraded in each country, the Coordination Centers will be located at existing selected institutes, with good organizational capacities and a recognized international experience, primarily in HELCOM and ICES work. Lead laboratories covering designated areas of expertise will be located where specialists are available and their specialty well established.

Sub-activity 1(a) Strengthen Institutional Capacity of Coordination Centers

43. ”The Coordination Centers will be responsible for coordinating various activities both in the open sea and coastal areas. That would include the data collection, within the framework of these LME modules: (i) productivity, (ii) pollution and ecosystem health, and (iii) fisheries. In collecting and processing the data, the Coordination Centers will closely cooperate with the Lead Laboratories.

44. Each Coordination Center will have common responsibilities. Specific responsibilities are identified accordingly in Annex 1, Attachment 1, Terms of Reference for Component 1 Coordination Centers. Annex 1, Attachment 2, Terms of Reference for Lead Laboratories outlines the responsibilities for the Lead Laboratory Expert.

45. The common responsibilities include activities:

- To conduct and coordinate collaborative research and training.
- To organize an introductory coordination and a technical workshop relative to their focus area.
- To identify the need and draft specifications for equipment required to upgrade national laboratories.
- To coordinate compilations and data processing.
- To forward result to the GIS-Data Coordination Center.
- To coordinate and arrange participation in appropriate regional fora and ICES working groups.
- To coordinate with the Component 1 Assistant Coordinator administrative, logistical and procurement issues.
- To consult with the Component 1 Coordinator on technical matters.
- To manage information and knowledge network for Component 1 activities and cooperate between sub-activities and other regional programs and program outputs, as needed.
- To regularly report to HELCOM, IBSFC and ICES, as well as their relevant working groups, on findings obtained in the course of project implementation.

46. The common responsibilities of Lead Laboratories include activities:

- To assist the Coordination Centers in identifying the need and in drafting specifications for equipment required to upgrade national laboratories
- To organize and train staff as required for new equipment and techniques.
- To act as reference center within their area of expertise for other BSRP laboratories and ICES.
- To coordinate and organize commercial and research vessels for monitoring/data collection, and define a joint coordinated sampling schedule to include relevant multi-national staff.
- To coordinate collection and distribution of samples within their respective disciplines and to assist the Coordination Centers in compilations and data processing.

Task (1) Fisheries Coordination Center, Latvian Fisheries Research Institute, Riga, Latvia

(a) This Center will coordinate all the fisheries and monitoring activities, and assessment of coastal and open sea fish stocks. The following Lead Laboratories will report to Fisheries Coordination Center on these subjects:

(i) ICES joint surveys in the eastern Baltic: AtlantNIRO, Kaliningrad, Russia.

(ii) Coastal fish monitoring: Estonian Marine Institute, Tallinn, Estonia.

(iii) Age determination and fish stomach analyses: Latvian Fisheries Research Institute, Riga, Latvia.

(iv) Preparations for salmon river restoration: Latvian Fisheries Research Institute, Riga, Latvia.

(b) In addition to the responsibilities noted above the Fisheries Coordination Center, supported by the Lead Laboratories, will:

(i) Upgrade and inter-calibrate trawling, acoustic surveys, near-shore fish monitoring and biological/environmental sampling equipment and age determination equipment for all national laboratories.

(ii) Serve as a reference center for age determination of marine and fresh water fish and establish cooperation with ongoing regional projects.

(iii) Arrange workshops for inter-calibration of the regional laboratories.

(iv) Arrange workshops and training in near-shore fish monitoring techniques.

Task (2) Productivity Coordination Center, Institute of Aquatic Ecology, Riga Latvia

(a) The Center will coordinate all activities related to the LME Productivity module, which include data collection on oceanography, plankton and harmful algal blooms. The following Lead Laboratories will report to the Productivity Data Coordination Center, on these subjects:

(i) Plankton Sorting and Identification Center, Gdynia, Poland: ichthyoplankton and zooplankton.

(ii) Coastal Research and Planning Institute, Klaipėda, Lithuania in cooperation with the Regional Biological Invasion Center, at the Zoological Institute of Russian Academy of Sciences, St. Petersburg: alien species.

(iii) Estonian Marine Institute: Ships of Opportunity activities

(b) In addition to the responsibilities noted above the Productivity Coordination Center, assisted by the Lead Laboratories, will:

(i) Compile and be responsible for data on alien species.

(ii) Compile and be responsible for data on eutrophication.

(iii) Cooperate, and arrange workshops, with Algaline, Helsinki.

(iv) Compile and be responsible for all associated oceanographic data.

Task (3) Pollution and Ecosystem Health Coordination Center, Sea Fisheries Research Institute, Gdynia, Poland

(a) The Center will:

(i) Coordinate activities related to ecosystem health, e.g. the MMED, and cooperate with the Fisheries Coordination Center in the monitoring of near-shore fish communities and sampling of sentinel species of fish.

(b) The following Lead Laboratories will report to Pollution and Ecosystem Health Coordination Center on these subjects

(i) Estonian Marine Institute, Tallinn, Estonia: phytobenthos monitoring. This laboratory will establish a phytobenthos monitoring program.

(ii) AtlantNIRO, Kaliningrad, Russia: histopathology, parasitology and fish diseases. This laboratory will serve as a reference center for these subjects.

(c) In addition to the responsibilities noted above the Pollution and Ecosystem Health Coordination Center, assisted by the Lead Laboratories, will:

(i) Coordinate training with western Baltic laboratories.

(ii) Develop databases for phytobenthos.

(iii) Intercalibrate equipment for phytobenthos monitoring.

(iv) Coordinate and conduct training in scuba-diving technique.

Task (4) GIS Data Coordination Center, Lithuanian Integrated Coastal Zone Management Information Center, Vilnius, Lithuania

(d) The GIS-data Center will process the data produced by the BSRP and convert part of it into GIS format, thus allowing its use for spatial modeling purposes, including the MMED data collection and assessment activities. In the near-shore activities the GIS Coordination Center will take the lead, in cooperation with ICES, the other Centers and Component 2, to coordinate, and compile relevant baseline information and knowledge from national programs, to assist in supplementing the database needed for ecosystem-based assessments. The GIS Center will provide support for data handling and monitoring procedures.

(e) The responsibilities of the GIS Data Coordination Center will be to:

(i) Coordinate and communicate with ICES data bases.

(ii) Develop specifications for standardized computer equipment in national laboratories.

(iii) Take the responsibility for modeling efforts.

(iv) Arrange workshops on standardizing the data compilation activities.

(v) Support the Pollution and Ecosystem Health Data Coordination Center in collecting and assessing the MMED data.

(vi)

(vii) Coordinate and be responsible for compilation and reporting of data from the BSRP activities to the Steering Group.

Task (5) Socio-economic Coordination Center, Estonian Marine Institute, Tallinn, and Tartu University, Tartu, Estonia

(a) The Center will coordinate the preparation of socio-economic evaluations of the impact of activities within the Project. Coordination will aim at:

(i) Establish communication and cooperation with other regional projects with socio-economic experiences relevant to the component activities.

(ii) Arrange workshops aiming at regional cooperation within the subject and transfer of know-how to the project.

Sub-activity 1(b) Conduct Training and Workshops for Strengthening Capacity to Implement Component 1 Activities

Regional workshops, seminars, conferences and participation in WWF, Baltic Marine Biologists (BMB) and ICES activities, will take place during the project implementation period as information from the projects is developed when regional programs expand, and outcomes become relevant.

Task (1) Training and Transfer of Know-How for BSRP Key-Persons and Team-Leaders

(a) In the beginning of the project implementation, a series of information and coordination meetings for Component 1 key-persons and team-leaders will be necessary. These should be held at ICES, HELCOM or at a specified specialist institute or organization. In some cases consultants will arrange regional or local workshops. Most of the needs for this transfer of know-how are specified under respective Activities and Sub-activities.

Task (2) Seminar Series: Integrated Coastal Zone Management - Regional Efforts in the Baltic Sea (in cooperation with Component 2)

(b) Seminar 1: Joint seminar on eutrophication, Baltic fish and fisheries.

Task (3) Participate in ICES WG activities

(a) The PSRP will support participation of eastern Baltic state scientists in the work of selected ICES working groups. These working groups are *inter alia*: (i) WGBFAS,

(ii) WGBAST, (iii) WGBIFS, and (iv) Baltic Committee at the ICES Annual Science Conference. Participation in the enumerated events would substantially contribute to increase of the general scientific capacity of the institutes and universities which these individuals represent.

The assessment working groups (WGBFAS and WGBAST) evaluate stock status. At present these assessment groups deal with cod, herring, sprat, flatfishes (dab, plaice, flounder, turbot, brill), salmon and sea trout. WGBIFS coordinates the two trawl surveys and the acoustic survey. Each group meets once a year, in accordance with a schedule decided at the ICES annual Science conference. These assessments are of the single species type. In parallel, and to some extent involving the same scientists as those involved with assessments, the ICES Working Groups investigate how to implement an ecosystem approach to stock evaluation and advice formulation. Increased participation in all relevant ICES Working Groups, and in particular the Baltic Committee at the ICES Annual Science Conference, will increase the general scientific capacity of the institutes and universities in the recipient countries.

Sub-activity 1(c) Coordinate Near Shore Activities

47. To establish the framework for Component 1 coastal-near shore activities, initially there will be a series of organizational and operational workshops, followed by pre-design field surveys, and coordination and training as needed. The coastal monitoring and assessment activities include (a) coastal commercial, recreational, and non-commercial, fish, (b) phytobenthos activities. Pelagic productivity monitoring and assessment will be integrated and zooplankton-pelagic fish surveys will be running as an extension of the open-sea program into near-shore recruitment areas for herring. The monitoring and assessment results will be reported and coordinated with the offshore monitoring and assessment and land-based monitoring and assessment activities.

Task (1) Conduct Introductory Workshops

(a) Develop and implement a coordinated near-shore strategy for integrated monitoring and assessment of fish, productivity and ecosystem health as identified in Table 3.

(b) A near-shore fish monitoring and assessment strategy will be prepared and the theoretical background to fish monitoring presented.

(c) A phytobenthos monitoring and assessment strategy will be prepared and will include preparation of a database and the theoretical background to the phytobenthos monitoring.

Task (2) Prepare for Coastal Activities to Establish Proper Monitoring Stations

(a) Compile and analyze COBRA monitoring data from 1991-2000 as a background to the monitoring system, this database will be expanded to supplement the proposed HELCOM-COMBINE monitoring parameters.

(b) Initiate pre-design surveys for fish and phytobenthos in areas outlined in the strategy developed during Task (1) introductory workshop.

(c) Select sites for the fish and phytobenthos sampling stations in correlations with other monitoring and assessment activities. Develop Guidelines which would indicate the number of required stations, timing of data collection and other important procedures. Team leaders at Coordination Centers will identify, review and approve monitoring site.

Task (3) Organize and Conduct Technical Training and Workshops

(a) Field techniques training for field and laboratory staff will be provided to near-shore test-fishing procedures as will sampling techniques and instructions on the use of guidelines and data base software.

(b) Equipment for phytobenthos investigations will be procured, training of researchers in scuba diving procedures will be made, and three participants from each country will be sent to diving/scuba courses that can be provided in a Swedish or Finnish education program.

(c) Training will be held on-site to inter-calibrate phytobenthos monitoring techniques.

Task (4) Provide International Technical Assistance for Near Shore Activities

(a) International experts will be contracted to provide expertise and instruction on certain technical and institutional capacity building aspects. This task complements the efforts In Sub-activity 1(a) however emphasis will be placed on specific needs for near-shore activities. The scope of services for the international consultants is detailed in the Annex 2, Terms of Reference for Consultant Services for Near Shore Activity. The activities of this task include:

(i) Visits to the project area to assess training needs.

(ii) Conduct the training programs and lead the inter-calibration exercises.

(iii) Assist the COBRA data center in evaluating the 1991-2000 monitoring database as the basis for the introductory workshops. Also, provide assistance in introducing environmental management techniques into commercial fisheries.

(iv) Provide day-to-day services to support networks.

(v) Organize evaluations, assessments and prognoses.

Task (5) Coordinate Local and Regional Information and Institutions

(a) GIS Coordination Center will take the lead, in cooperation with ICES, the other Centers and Component 2, to coordinate, and compile relevant baseline information and knowledge from regional programs, to assist in supplementing the database needed for ecosystem-based assessments. The GIS Center will provide support for data handling and monitoring procedures.

(b) A system for common data access will be developed. This includes information from ICES, HELCOM, GRID-ARENDAL, BASYS, GOOS, BOOS–GIS, BMB, GIWA, Baltic 21, and Algaline.

(c) Coordination is achieved with the COBRA database. On HELCOM COMBINE for the coastal activities this includes data from the phytobenthos monitoring and assessment activities

Sub-activity 1(d) Coordinate Open Sea Activities

48. Coordination of the monitoring and assessment activities is done through ICES Advisory and Science Committees, Working Groups and Study Groups. ICES creates and maintains databases on the abundance surveys to allow easy access to the data. Tasks within this sub-activity are to (a) coordinate sampling design and organize joint surveys, (b) confirm data collection procedures and reporting requirements, (c) develop a strategy to pool information to achieve a common data base for the best possible assessment of the status and trends in fish stocks, (d) coordinate fish and productivity monitoring, and (e) coordinate research and monitoring efforts to achieve timely information for management action. Fishery data are collected from research vessels, commercial fishing vessels, and landings of commercial fish. Productivity and environmental health data will be collected from research vessels and laboratories.

Task (1) Coordinate Joint Abundance Surveys

(a) Coordinate abundance Surveys through the ICES Baltic International Fish Survey Working Group (BIFSWG). Table 3 identifies the three ICES coordinated abundance surveys in the Baltic Sea. The joint surveys will include the exchange of scientists between vessels, participation in BIFSWG and resources in the laboratories to allow input to BIFSWG. There are manuals describing established survey procedures (refer to the Report of the Baltic International Fish Survey Working Group, 3-7 April 2000 (ICES Doc. CM 2000/H:2) for the latest versions).

Task (2) Upgrade Landing Statistics Knowledge

(a) A range of physical and biological parameters is collected on fish landed from commercial fishing vessels. This effort is coordinated through the Coordinating Working Party on Fishery Statistics (CWP), a worldwide organization for which FAO (UN) provides secretariat services. There are significant problems with standardizing age determination between laboratories.

The Lead Laboratory for age determination (the Latvian Fisheries Research Institute, Riga) will coordinate training to achieve better standardization using guidelines from FAO/Eurostat: Handbook of Fishery Statistics, Rome 1993.

Task (3) Promote Awareness among Commercial Fishermen on Logbook Data Reporting

(a) IBSFC regulations require the use of logbooks, by commercial fishermen. The activities in Task 2 and Task 3 will be coordinated with the activities of the EU Twinning Projects which will be implemented in Latvia and Lithuania in 2002-2003.

(i) The ICES Baltic Fisheries Assessment Working Group (WGBFAS), and technical staff will participate in training efforts to standardize logbook information.

(ii) In-field training outreach will be made to work with the local fisherman on the benefits of accurate logbook data.

Task (4) Coordinate and Integrate Fish and Productivity Monitoring and Assessment

(a) One of the BSRP objectives is to introduce the ecosystem approach into fish stock assessments. Therefore, Component 1 also includes activities aimed at obtaining data on general productivity of the BSLME. Such data (including information on zooplankton and primary production) will be collected from the research vessels conducting regular surveys as well as from cutters and boats closer to the coast. The data collection and analyses will be coordinated through such ICES groups as the Study Group on Ecosystem Assessment and Monitoring, and the Study Group on Marine Biodiversity.

Task (5) Coordinate Observer Program for Sampling Discards and Non-Target By-Catches

(b) The EC financed an extended observer program in 1997-1999 for commercial vessels to provide discard data. These data indicate that in the Baltic Proper (Sub-divisions 25-29) there are discards in the cod fisheries. The EC project laid down standards for the collection of data; these standards shall be revisited and implemented (see report of the Coordinated EC program to obtain information on Discards and By-catches in the Baltic, 2000). Coordination of this work should be done through the ICES Baltic Fisheries Assessment Working Group (WGBFAS), and the collected data analyzed by the ICES Study Group on Discard and By-catch information (SGBDI).

Activity 2. Operationalize Monitoring and Assessment Surveys in the Eastern Baltic Sea

49. *Introduction to Activity 2.* Evaluation of the status of fish stocks throughout the Baltic requires data both from the commercial fisheries and from fishery-independent abundance indicators. These fishery abundance indicators are obtained through fishing and echo sounding using research vessels. The efforts of this activity will put the cooperating countries in a better position to contribute to the international assessment work, by improving the database available for assessment of the fish stocks in the Baltic Sea, as well as an improved assessment of the ecosystem health. Furthermore, the activity will expand the data series that are required for future application of an ecosystem approach to management of the Baltic Sea ecosystem.

50. The Baltic proper (Subdivisions 25-29) forms a stock area for many of the commercially important stocks and surveys are therefore defined for this area. There are other abundance surveys in the western Baltic and north of the Åland Islands. Through ICES, these surveys are coordinated with the work discussed below. Three joint coordinated surveys are established in the Baltic Proper (a spring trawl survey, an autumn trawl survey and an acoustic survey in the late summer). Data are brought together in the BITS database maintained at ICES headquarters in Copenhagen. Poland, Russia, Latvia, Denmark, Sweden and to a limited degree also Germany, participate with ships in these surveys.

51. The institutes involved will be the same as for Activity 1 with the Latvian Fisheries Research Institute, Riga as Coordination Center and AtlantNIRO, Kaliningrad, as Lead Laboratory for ICES joint surveys in the eastern Baltic.

Sub-activity 2(a) Conduct Near Shore Monitoring and Assessment Surveys

52. *Introduction.* The coordination efforts in Activity 1 will provide the framework for surveys in the near shore areas. The coordinated effort for fish, productivity and ecosystem health parameter monitoring is based within the HELCOM/COMBINE fish monitoring and assessment program. Data will be collected on specific ecosystem indicators, which then can be correlated to land and coastal management activities and fisheries. The coordinated surveys will take place in selected areas of the coastal zone demonstration sites, and the phytobenthos and water quality monitoring will correspond with Component 2 in-stream monitoring sites. The monitoring of some commercial fish stocks is also established in areas outside the Component 2 demonstration sites.

53. Many open sea fish species depend on near-shore areas for their recruitment. Baltic herring is sensitive to changes in phytobenthos and pelagic productivity as they lay their eggs on submerged vegetation and as their larvae feed on zooplankton in shallow water during the first months. The open-sea monitoring of pelagic fish thus will be extended into the selected areas, and the monitoring of productivity will be designed to support spawning observations and young fish survey data. The existing coverage of herring nursery areas does not provide for reliable estimate of the juvenile abundance, thus severely limiting the possibilities to predict the strength of the incoming year classes. This has a correspondingly strong negative impact on the accuracy of the scientific predictions that are essential for advising on fishing possibilities within sustainable limits.

Task (1) Procure Monitoring Equipment

(a) For fish monitoring, procure small boats with outboard engines and test-fishing equipment for near-shore activities. Procure portable acoustic sonars and trawling equipment for cutters, similar to the ones used on board the research vessels. These cutters will sample the same series of environmental, fish, and productivity parameters.

(b) For phytobenthos monitoring, procure the scuba diving and associated field sampling equipment.

Task (2) Contract Cutter and Trawl Fleet That Will Assist in the Monitoring

(a) Cutters and other fishing boats used in the local commercial fisheries will be chartered for use in sampling and monitoring activities.

Task (3) Engage the Coastal Fishermen

(a) Engage local fishermen in field monitoring programs.

(b) Organize Local Fishermen into a Network with scientists and managers in Matsalu, Pärnu, Engure/Kemeri, the Kursiu Lagoon and the Vistula lagoon. Interested fishermen will be encouraged to keep records of their fisheries and deliver data to the project.

(c) Organize an informal network and coordinate with the Coastal Zone Management activity in Component 2.

Task (4) Conduct Integrated Monitoring and Assessment Surveys

(a) Conduct coastal fish monitoring and assessment based on standardized test fishing following HELCOM guidelines in all Component 2 demonstration sites and in reference areas in the Gulf of Finland (Russia, Garkalovo Bay), the Moonsund (Estonia, Hiiumaa), Latvia (remains to be selected) and Poland (remains to be selected). Monitoring administrated by COBRA is currently running at Hiiumaa and in the Kursiu Lagoon, and preparatory studies including site selections have been made in Matsalu Bay and the Daugava River mouth and started in Garkalovo Bay.

(b) Conduct phytobenthos monitoring as an indicator for changes in eutrophication according to the recently issued HELCOM guidelines. Samples will be collected at fixed stations using scuba divers or surface techniques, depending upon the local conditions. The depth penetration, coverage, species composition, biomass and the occurrence of the epiphytes will be monitored. As feeding conditions for pelagic fish are of great concern, a zooplankton program will be designed to test hypotheses on structural changes in the pelagic system as the cause for poor herring growth. The samplings will be made from small boats at the time of phytobenthos monitoring and from cutters at four additional occasions, two of them in connection with the near-coastal acoustics surveys.

(c) Develop a database for phytobenthos to produce data for HELCOM assessments.

Sub-activity 2(b) Conduct Joint, Integrated Open Sea Surveys

54. Joint open sea surveys will include a multi-national technical crew to conduct combined monitoring of fish, productivity, and ecosystem health parameters from research vessels and satellite remote sensing systems. As noted in Table 3, there are three on-going joint abundance surveys in the Baltic Sea under the BITS program and the BIAS program - all coordinated by BIFSWG. Abundance surveys will be conducted by established survey procedures; refer to the Report of the Baltic International Fish Survey Working Group, 3-7 April 2000 (ICES Doc. CM 2000/H:2) for the latest versions. The joint open sea surveys will focus on the Baltic proper and the Gulf of Finland (Subdivisions 25-29S+32), while the ICES coordinated surveys in principle cover the entire Baltic (Subdivisions 22-32). The economical zones of the recipient countries are part of the Subdivisions. However, at present, areas in the eastern parts are not adequately covered.

Task (1) Procure Necessary Monitoring Equipment

(a) Procure necessary equipment to upgrade ships for more accurate abundance surveys; this includes upgraded acoustic equipment, to allow the Eastern Baltic States to obtain the high quality data.

(b) Standardize trawl operation on vessels. Modern acoustic instruments are not available on all vessels involved in these surveys.

Task (2) Joint Baltic International Bottom Trawl Survey (BITS)

(a) Conduct joint surveys according to the agreed manual for BITS.

(b) Conduct sampling of fish stomachs in accordance with the ICES manual on fish stomach sampling, and coordinated through the ICES Study Group on Multi-species Predictions in the Baltic. These data are required for expanding the single species analysis to include species interactions.

(c) Conduct assessment of fish stocks. Compilation of data (results from abundance surveys, catches, samples from commercial fisheries, etc.) will be done in the ICES Working Group on Baltic Fisheries Assessment, see Activity 1, Task (4). Abundance estimates or indices thereof are essential in fish stock assessment.

Task (3) Joint Baltic International Acoustics Surveys (BIAS).

(a) Conduct surveys according to Protocols in the agreed manual for BIAS, (see the Report of the Baltic International Fish Survey Working Group, 3-7 April 2000, ICES Doc. CM 2000/H:2). The survey is a trawl-acoustic survey where use of echo-sounding is used for estimating abundance and trawling is used to identify the echo traces. Shallow sampling areas will need to be covered using portable echo-sounder equipment installed on chartered commercial cutters. The open sea work will be extended over all eastern Sub-divisions of the Baltic Sea. Evaluation of acoustic parameters of the biological targets (Target Strength) can be performed by dual-beam and two-frequency echo integration methods. This survey shall be coordinated with the similar survey taking place in the coastal zone. Methods that are used in the open sea cannot directly be used in more shallow waters and need to be modified.

(b) Conduct fish stomach sampling in accordance with the ICES manual on fish stomach sampling, and coordinate through the ICES Study Group on Multi-species Predictions in the Baltic. These data are required for expanding the single species analysis to include species interactions.

(c) Conduct assessments of fish stocks: bringing all the data together (results from abundance surveys, catches, samples from commercial fisheries, etc.) will be done in the ICES Working Group on Baltic Fisheries Assessment, see Activity 1, Task (4). Abundance estimates or indices thereof are essential in fish stock assessment. The improved sampling coverage will provide critical data for improving the scientific assessment of fish stocks in the Baltic Sea. This work will be coordinated through the ICES Baltic Fisheries Assessment Working Group.

Task (4) Progress from Single to Multi-Species Stock Assessment

(a) Currently, ICES is using the Baltic Sea as one of its main case studies, based on a stock-by-stock consideration, on how to expand the current management advice to an integrated ecosystem approach. In fishery management terms this involves the inclusion of both environment-fish abundance links and fish-fish interactions. Links between cod growth and abundance of sprat/herring are well established. Other evidence indicates the existence of links between the abundance of the major fish species and the recruitment of these species. The mechanism seems to be through cod predation. Cod stomach contents, particularly Baltic Cod, have been sampled over

several decades and this database has been analyzed by ICES Working Groups established to deal with this task. The work has shown that the major stocks in the Baltic Sea interact strongly and that this interaction varies between years, depending on the relative abundance of the major fish stocks. Relative abundance has shown major changes over the last decades. Therefore:

(i) Monitoring of cod predation will continue through an extended and internationally coordinated cod stomach-sampling program.

(ii) Data will be collected using the scheme of seagoing observers on commercial fishing boats as well as the research vessel cruises. This work will be coordinated through the ICES Study Group on Multi-species Predictions in the Baltic.

Sub-activity 2(c) Improve the use of Ships of Opportunity (SOOP)

55. *Introduction.* The traditional monitoring program for the plankton community used by most countries around the Baltic has proven to be unreliable in detecting rapid changes in the ecosystem e.g. toxic blooms of phytoplankton and marked regional variations. Ferry vessels that navigate the Baltic sea on regular routes, or the so called ships of opportunity, carry the monitoring equipment which automatically records the data on plankton, nutrient contents, productivity as well as the hydrographic parameters. The techniques are based on automatic recordings of plankton, nutrients, productivity and hydrographic parameters. The recordings made by the SOOPs will be supplemented by monitoring and assessment made from research vessels from several Baltic countries and by results obtained through satellite imagery analysis. The aim is to establish a cost-effective, rapid way of reporting changing conditions in the Baltic Sea plankton communities, the food chain affecting fisheries yields, and the health of the Baltic Sea ecosystem. Volume 2, Part A provides details on SOOP activities.

Task (1) Extend the Present Spatial and Temporal Sampling of SOOP Vessels

(a) Arrange a joint workshop with Algaline to evaluate and select the most comprehensive and effective routes and instruments for monitoring.

(b) Negotiate with ferry and ship owners about working procedures and contracts.

(c) Procure and establish equipment on board of ships.

(d) Arrange information and training for selected responsible crew members.

Task (2) Prepare for Establishment of a Rapid Information Exchange Network to Provide Comprehensive Information of the Plankton and Environment Status of the Areas Monitored

(a) Arrange a workshop with Algaline, ICES and HELCOM PR officers, and GIS data Center to establish a common web-based information network.

(b) Negotiate with ferry/ship owners about the use of their engagement in PR purposes.

Task (3) Develop, Update, and Implement Operational Activities to Ensure Appropriate Ecosystem Sampling and Timely Output of Assessment Results

(a) Establish standard procedures for result reporting, compilation and assessment from SOOP and research vessel activities.

(b) Arrange a workshop at ICES to develop, update, and implement operational activities to ensure the appropriate ecosystem sampling and timely output of assessment results.

(c) Acquire, test, evaluate, and deploy on one or two ferry lines: continuous plankton, oceanographic, and nutrient fixed depth and undulating towed-bodies and sensor payloads to support (1) environmental indexing (2) biological carrying capacity, (3) biodiversity, and (4) trophodynamic assessments.

(d) Provide training opportunities for the deployment and analyses of continuously profiling samplers.

Task (4) Report SOOP Results

(a) Develop a reporting format for reports to management institutions and national governments on changing conditions within the Baltic Sea food chain affecting fisheries yields, and health of the Baltic Sea ecosystem.

Sub-activity 2(d) Collect Data from Commercial Fishing Vessels

56. Data from commercial fishing vessels will be obtained from landings and logbooks.

Task (1) Collect Landing Information

(a) Landings statistics from commercial fishing vessels will be collected. For a detailed description of sampling areas, species codes etc, see FAO/Eurostat: Handbook of Fishery Statistics, Rome 1993.

(b) Biological characteristics of landings will be obtained through sampling of the landings and converting the weight to catch-at-age in numbers. This conversion therefore involves, in particular, determining the age of the fish. Other biological parameters such as weight and length are also recorded. These samplings follow standards laid down by former ICES Working Groups. Landings from the offshore Baltic fisheries are sampled, but the frequency and spatial coverage needs to be improved.

(c) Analysis of biological samples from landings: these data will improve the quality of the assessments. Furthermore, exchanges will be established for comparative purposes among countries in the eastern Baltic, in order to harmonize the age reading.

Task (2) Improve Collection and Accessibility of Logbook Data

(a) Technical staff will work with commercial fishermen to improve understanding among commercial fishermen of the value of these data. Through such activities

more precise information on effort and the distribution of catch and effort will become available.

(b) Improve the accessibility of logbook data: Data are used as inputs to the stock assessments. Logbook data must therefore be made more readily accessible to researchers for their analyses. This task will be to extract data from the national databases for further analysis by scientists for use in assessments. Through this activity the quality of the assessment can be improved, making a number of commercial catch rate abundance indicators available for the assessments.

(c) The work is coordinated through the ICES Baltic Fisheries Assessment Working Group (WGBFAS), as well as with the EU Twinning projects which will implemented in Latvia and Lithuania in 2002 and 2003.

Task (3) Monitoring Ecosystem Effects on Non-Target Species

(a) Data to evaluate effects on the ecosystem in a wider context than the removal of fish from the target stocks will be obtained directly from the commercial fisheries, through an observer program and by using research vessels engaged in the joint Baltic Fish Surveys.

(b) An observer program (observers on-board commercial vessels) will provide data on the effects of fisheries on the ecosystem, e.g. by-catches of seals and sea birds. EC financed an extended observer program in 1997-1999 for commercial vessels to provide discard data. This EC project laid down standards for the collection of data; these standards shall be revisited and implemented, see report of the Coordinated EC program to obtain information on discards and by-catches in the Baltic, 2000. The coordination task will be implemented through participation in the ICES Baltic Sea Fisheries Assessment Working Group and the ICES Study Group on the Scientific Basis for Ecosystem Advice in the Baltic (SGBEAB). This will provide data on the effects of fisheries on the ecosystem, e.g. by-catches of seals and sea birds.

Task (4) Fish Landings Stomach Data

(a) Collect data in accordance with the ICES manual on fish stomach sampling, and coordinated through the ICES Study Group on Multi-species Predictions in the Baltic. Data will also be collected using research vessels under the joint Baltic Fish Surveys (the two BITS and the BIAS surveys).

Activity 3. Cooperative Local and Regional Evaluations and Assessments

57. *Introduction to Activity 3.* ICES provides scientific support and advice to HELCOM and IBSFC in their management of the Baltic ecosystem. ICES' role is to provide scientific background material for the further processing of the information through these Commissions. Through Activity 1 the Baltic countries' institutional capability to participate in this process will be improved. Under Activity 2, data and information will be collected that will substantially strengthen the evaluation of the status of the ecosystem. Activity 2 will also improve the accessibility of data on environment, fish and fisheries to researchers and managers, for comprehensive evaluations of activities in relation to defined objectives for environment and fisheries. The long term joint fish stock surveys and cooperative assessment processes will lead to improved information on the fish stocks of the Baltic ecosystem and to a higher quality of

scientific advice for sustainable ecosystem based management. To reach the target for sustainable Baltic fisheries set up by e.g. IBSFC, better management models and improved indicator systems are needed for open-sea as well as near-shore fisheries. While ICES will compile the information in cooperation with the Commissions, Activity 3 will apply the data collected under the monitoring activities in an assessment process for addressing local issues. Under Activity 3 there will also be a stakeholder involvement in the assessment process.

Sub-activity 3(a) Evaluate and Assess Component 1 Information

Task (1) Compile and Process Data

(a) A number of species/stocks (mainly near-shore) support locally important fisheries. The data on these fishing activities will be collected through Activity 2, and will be processed and evaluated through Activity 3. These activities include monitoring of fish and phytobenthos, as well as the evaluation of indicators of sustainable fisheries and environmental health.

(b) To digitalize the processed and evaluated data into GIS format at the GIS data coordination center. The center will organize data and make geographical analyses in a situation where the spatial distribution is of importance for understanding the status of the ecosystem.

Task (2) Conduct Integrated Assessments

(a) Where problems have been identified that are not dealt with through the established procedures under HELCOM and IBSFC, Activity 3 will take the initiative and provide a framework for addressing such issues. This involves the following tasks:

  (i) Compile, analyze and evaluate available data and where appropriate provide recommendations and identify reporting needs.

  (ii) Establish a reporting system in coordination with the existing systems under ICES, the BMB, and the usual channels for the communication of scientific data and findings (journals etc.).

(b) Possibilities to enlarge the scope of assessments to encompass entire Baltic ecosystem will be explored in order to support development and application of relevant ecosystem models. Workshops will be held to discuss experiences and to integrate phytobenthos, fish, water chemistry and productivity monitoring and assessment.

Task (3) Review and Apply Fish Stock Assessment Models

(a) Through the effort of the participating eastern Baltic Sea countries the basic data for the fish stock assessment, especially the quality of fish aging and collection and presentation of data on the catch per unit effort, will be substantially improved by filling existing gaps, and introduction of quality assurance standards. Improved assessment data and more accurate fisheries statistics will be used for reviewing the assessment models and the estimation procedures of the dynamics of fish stocks.

(i) The possibility to collect reliable data on catches or landings of coastal fish will be evaluated.

(ii) Coordinate with the ICES Baltic Committee, BMB etc. to improve the standard models used to estimate fishing mortality and to predict the development of fish stocks. This will involve other indicators besides catch statistics and CPUE data.

(iii) Conduct workshops to develop management models and indicators for sustainable coastal fisheries.

(iv) The possibilities to use recruitment models in estimating the annual variations of perch and pikeperch yearly class-strengths will be analyzed.

Task (4) Build International Fisheries Databases (landings, abundance surveys)

(a) Evaluations will be facilitated through systematic storage of all assessment data in easy accessible databases. Such a database exists for the international assessment data and is under finalization for the BITS surveys.

(b) Transfer the BIAS database to the ICES Secretariat. The BSRP will provide support to scientists from the Baltic Countries in finalizing the development of this database, ICES WGBIFS has worked on constructing a database for the BIAS survey (acoustic and biological data) and these data are stored in an Internet database located at the Danish Institute of Marine Research.

(c) COBRA will process some information and include it in its common database in Mariehamn, Åland. COBRA will provide technical support and advice on the use of guidelines and software, and act to keep a high level of harmonization within the program. COBRA will report data to HELCOM after QA, which requires an increase in the capacity of COBRA as a result of the new responsibilities.

Task (5) Provide Ecosystem-based Management Recommendations and Tools

(a) In 2000, ICES established its Advisory Committee on Ecosystems (ACE) as well as a work plan to further develop the scientific foundation for providing scientific advice based on an ecosystem approach. This was done in response to requirements for information on an ecosystem level from a number of sources inside and outside ICES, including HELCOM's recent mandate for holistic advice. Activity 3 will support these developments and will take initiatives to further the necessary development of models and databases. This will be instrumental in bringing the fishermen, managers and scientists together to develop ecosystem quality objectives and to improve the understanding of the function of the ecosystem. A specific task that needs urgent attention is the development of *in-situ* target strength methods for application in shallow water. This is a prerequisite for acoustically surveying the shallow coastal zones. Topics that will be addressed include*:*

(i) Evaluate fish stock structure, particularly of the currently not evaluated herring stocks and incorporate this information into the fish stock assessments.

(ii) Conduct the multi-species assessments using the predator-prey data from fish stomachs

(iii) Link environment parameters with fish stock productivity (growth and recruitment) and changes in prevalence of diseases and parasites, in relation to natural environmental variation and anthropogenic activities.

(iv) Improve procedures and manuals for age reading.

Sub-activity 3(c) Economic Evaluation of Component 1 Activities

58. The Coordination Center for socio-economic evaluations of the implications of activities in Component 1 will be the Estonian Marine Institute. Workshops and transfer of know-how to the coordination center will be arranged and contacts will be established with socio-economic centers within and outside the region.

Activity 4. Demonstration Activities

59. *Introduction.* Changes in the coastal zone ecology may have an impact on socio-economic conditions of the recipient countries. In Activity 4, some specific activities aims at demonstrating cost-effective measures to improve and restore affected habitats. Activities will be designed and carried out in close cooperation with the local population, the business community and authorities. In designing specific activities, a due respect will be paid to the lessons learned in the course of the previous or concurrently on-going projects.

60. Details on specific issues and justifications for project design, and technical information supporting the activities is found in Volume 2, Part A.

Sub-activity 4(a) Salmon River Restoration

61. *Introduction.* The rivers and areas selected for this sub-activity were selected to coincide with proposed Coastal Zone Management activities and the recommendations in the "Salmon Action Plan" (SAP) of the IBSFC. The SAP states that by 2010 all wild salmon rivers (present and potential) should produce at least 50% of their smolt potential. The plan recognizes that fishery regulations in many cases do not encourage reaching this goal, and additional actions in coastal areas and in rivers might be necessary. The rivers selected for the demonstration activity were chosen because their production of wild salmon is in line with the definition given by ICES, and they have a production capacity of a level high enough to reliably allow for a sea fishery. In the SAP, a wild salmon was defined as being the result of natural spawning and having spent its entire life in nature. This measure was further amended by ICES (ICES: CM 2000/ACFM:12) to state that a wild salmon is the result of spawning from parents hatched in nature and having spent their entire life in the wild. The tasks will be coordinated by ICES, the Estonian Marine Institute, the Latvian Fisheries Research Institute (Lead Laboratory), Klaipėda University, and Institute of Ecology in Lithuania. Technical specialists will be engaged, including a hydrologist, an ecologist, a salmon-fisheries specialist and a business development specialist. The local counterparts include local government and local communities.

62. *Geographic Context.* In Component 2 of the BSRP, five areas along the coast have been selected as demonstration areas for the improvements of on-farm activities and thus the improvements of the drainage/watershed environment including rivers. Many of these rivers have formerly been natural salmon rivers, have lost their salmon populations. In the SAP, an inventory

was presented of rivers belonging to this category and with the potential for restoration. Some of these are situated in Estonia, Latvia and Lithuania, and coincide with the demonstration areas included in Component 2. These are the Pärnu River in Estonia, Vitrupe River in Latvia and Minija River in Lithuania. The Pärnu River drains to the Gulf of Riga and carries a wild salmon population by the definitions given above. The river has a total length of 144 km. In Latvia two rivers fall into the Gulf of Riga that meet these criteria and both would be evaluated as potential salmon restoration demonstration sites. These are the Vitrupe River (length of 33 km) and the Peterupe River (length of 42 km). Both rivers rise in about the same area but run in different directions. In Lithuania, numerous tributaries of the Nemunas River, including Minija (length 213 km) sustain salmon populations.

Task (1) Preparation of Local Salmon River Restoration Inventory

(a) Within the framework of the IBSFC Salmon Action Plan, conduct with local counterparts an inventory and evaluation of possibilities to improve salmon reproduction areas and total wild salmon production in rivers.

(b) Prepare a Local Salmon River Action Plan including necessary measures, financial tables and investment needs.

(c) Submit Action Plan to the relevant national authorities.

(d) Draft amendments of the Fishery Act and Fishery Rules will be prepared and introduced in order to protect a sufficient number of wild spawners in rivers.

Task (2) Conduct Hydrologic and Ecological Evaluation of the Selected Rivers

(a) A technical team consisting of a local hydrologist, ecologist, salmon-fisheries specialist, and engineer will conduct the baseline assessment of recommended rivers proposed for restoration, survey the proposed demonstrations sites, evaluate smolt production as needed.

Task (3) Prepare Local Salmon River Restoration Action Plan (SRRAP)

(a) Draft an action plan with recommendations and restoration drawings and budget estimates to restore segments of the demonstration river, the action plan will be specific and differentiate civil work from labor efforts.

Sub-activity 4(c) Multiple Marine Ecological Disturbances (MMED)

63. *Introduction.* The Baltic Sea Large Marine Ecosystem has been subjected to outbreaks of harmful algae blooms, fish kills, marine mammal and seabird mortalities, anoxia, food web dysfunction, invasive species, epidemics of marine disease, beach closures, human illness, and compromised seafood quality. These are the more apparent of the multiple marine ecological disturbances (MMEDs) affecting the Baltic Sea LME. Perception that the health of the Baltic is degraded has motivated decades of data collection. But these data are highly sectorized and fragmented spatially and temporally. Results of studies pertinent to MMED assessment and mitigation remain scattered among thousands of reports, journals, and semi-public depositories. The key to recovering the loss of useful information within the Baltic region is to collect and apply the results of already completed studies and to create or reconstruct critical time-series of events and observations in an electronically based system suitable for near-real time tracking of

changes in ecosystem health. A prototype of this retrospective approach has been completed for the northwestern Atlantic and is known as the Health, Ecological and Economic Dimensions of Global Change (HEED) program. The methodology for introducing the MMED monitoring and assessment system to the Baltic Sea LME will be transferred and integrated into a Baltic/MMED system and operationalized for use in the BSRP. The objective of this Sub-activity is to introduce and to operationalize a Baltic MMED system. The expected outcome is that the result will aid in identifying patterns of marine disturbances and clarifying the cause of unusual morbidity, mortality and disease events observed among Baltic Sea populations and environments.

Task (1) Organize the Principal Components of a Baltic MMED System

(a) Arrange an introductory workshop with consultants and participants from the US HEED program, Baltic Map Server (MAPBSR), HELCOM and ICES data specialists, GRID-Warsaw, GRID-Arendal, Algaline and the BSRP GIS Data center with the aim to reach consensus on technical terminology and strategy for the establishment of a Baltic MMED system.

(b) Arrange training of the Baltic MMED team by HEED specialists.

Task (2) Arrange a First Regional Workshop with the following objectives

(a) Demonstrate the operation of the North American HEED program and reach consensus for technical transfer, development and operation of a Baltic MMED system.

(b) Debrief marine specialists on the key-words input system

(c) Establish input-output protocols for the designated Coordination Center for the Baltic Sea MMED system.

Task (3) Arrange a Second Regional Workshop with the following objectives

(a) Review of input-output results for ICES, IBSFC, and HELCOM and the BSSG.

(b) Establishment of Baltic-wide observer network.

(c) Training and consultation for system operators and users.

(d) Define possible ecosystem management tools-indicators

(e) Draft a report on the results of using the MMED methodology , including the recommendations for future activities

Sub-activity 4(c) Joint Coastal Zone Management

64. *Introduction*. The WWF coastal zone sub-activities described in Component 2 will deal with management plans for Nemunas River Basin, Kursiu Lagoon, Kaliningrad Lagoon/Vistula Lagoon, and Väinameri /Matsalu areas. Coordination and cooperation with relevant sub-activities of Component 1 will be coordinated by the LIU directors in cooperation with the C1 Assistant Coordinator. Coordination Centers, Lead Laboratories and consultants will be engaged as appropriate. For details see Component 2 Sub-activities.

Task (1) Coordinate and Evaluate Results of the Joint C1/C2 Coastal Zone Management Activities

Sub-activity 4(e) Promote the Use of Baltic Herring and Sprat for Human Consumption

65. *Introduction*. In fisheries for herring and sprat in the Baltic mainly trawls and purse seines are used. During the years 1994 to 1999 landings have been around 700,000 metric tons. The greatest part of this is taken for fish meal production. For herring it can be estimated that 90 per cent of the herring landings in 1999 was for reduction purposes, i.e. some 200,000 tons. Sprat landings amounted in 1999 to more than 420,000 tons and after deduction of catches taken by Estonia, Latvia, Lithuania, and Poland, where much of the sprat is used for direct human consumption, still more than 275,000 tons were used for reduction purposes. In total about 550,000 tons of herring and sprat were converted into fish meal. The use of herring and sprat in the Baltic for reduction to fish meal is rather a recent event. It started in the 1960s and had its greatest increase from the beginning of the 1990s onwards. Sweden and Denmark are the most important nations fishing for these two species for non-direct human consumption.

66. While according to ICES' ACFM, the status of different herring stocks in the Baltic has deteriorated, the sprat stock on the other hand seems to be in a healthy state. In order to rebuild the spawning stock biomass of Baltic herring, certain management measures are in force, but actions taken until now are considered to be far from sufficient.

67. The present sub-activity is intended to evaluate the possibilities for a more rational use of Baltic herring and sprat resources and especially to improve the use of these species for human consumption directly, as high quality fish meal or as surimi.

Task (1) Fish Technology Workshop

(a) A technical workshop with experts in fish technology, food processing and marketing will discuss the adaptation of existing technologies to the conditions in the Baltic and will aim at recommendations for further action by the fishing industry and the food processing industry.

B. COMPONENT 2 – LAND AND COASTAL MANAGEMENT ACTIVITIES

68. *Introduction to Component 2.* The Joint Comprehensive Baltic Sea Program highlighted the need to reduce the pollution loads originating from agricultural sector as an immediate priority. Since 1992, a number of Swedish supported (Baltic Agricultural Run Off Action Program, BAAP) field-based demonstration activities, were undertaken in Estonia, Latvia, Lithuania, Poland and Russian Federation. The activities within BAAP were complemented by other projects financed by the European Union, Denmark, Finland, Norway and the United States. The projects demonstrated that the efforts to reduce non-point source pollution from agricultural sector are feasible both from environmental and economic perspective. The Component 2 of the BSRP consists of (i) investments in capacity building and institutional strengthening, (ii) on-farm environmental investments, e.g. construction of manure storages and small scale natural sewage treatment facilities, the wetland management actions for increased retention of nutrients, coastal zone improvements, and (iii) monitoring and assessment of non-point source pollution originating from agricultural farms and watersheds.

69. *Component Objectives.* The Component 2 aims to improve living conditions for the local rural population through sustainable use of natural resources in agricultural and coastal areas. The effective use of natural resources, primarily nutrients is important in agricultural production and also for the protection of the surface- and groundwater , to minimize the hazards of eutrophication and loss of biodiversity.

70. The Component aims to:

- Increase the use of environmentally responsible agricultural practices in selected demonstration watersheds and river basins.

- Develop and test mechanisms for financing and evaluating environmental investments at farm level.

- Demonstrate methods for improved recycling and retention of nutrients

- Undertake demonstration activities in coastal areas linking the land-based measures to reduce non-point source pollution from agriculture with the activities in the sea.

- Strengthening the capacity of recipient countries to monitor the non-point source pollution from agriculture.

71. *Participants and Organizational Arrangements.* The Component 2 will be managed by the Component 2 Coordinator (C2C). In each country, a Local Implementation Unit (LIU) will be set up to work with local counterparts during implementation. The LIU Director will take the responsibility for the day-to-day management of the national program in a given country. Experts from local institutions with experience in control of non-point source pollution and ICZM will be contracted by the BSRP and engaged in the LIU. The Agricultural Advisory Services (AAS) will be the organizations most heavily involved in the LIU with 3-4 persons in each country under contract with BSRP. The LIUs in Kaliningrad oblast will be comparably smaller. International technical and economic experts funded by bi-lateral donors will assist the LIUs. The Swedish Agricultural University (SLU) will coordinate Component 2 and WWF will coordinate ICZM activities on behalf of HELCOM. NEFCO will participate by providing soft loans for investments. The BSRP will complement the Rural Environmental Protection Project in Poland

which is financed by GEF, NEFCO and the World Bank. Annex 3, Component 2 Institutional Organization, presents the implementation arrangements at regional and national levels.

72. The Agricultural Advisory Services (AAS) in the Baltic countries are operational since 1991. They provide the farmers with advice on both technological and economical issues. In Kaliningrad and St Petersburg Oblasts, similar services are provided in a limited ways by several institutes and companies. The AAS' are consulting agencies that are partly funded by state , and partly by farmers. The services are provided through a network of local offices in the districts. The BAAP program cooperated successively with these organizations in areas of institutional strengthening, training of advisors and in developing of on-farm environmental audits. The AAS will provide to BSRP an already established network of district offices, and advisors. Through the BSRP, the AAS will have an opportunity to significantly upgrade their technical capacities in providing agri-environmental services to farmers, thus contributing to fulfillment of respective national legislation and international commitments of respective governments

73. The BSRP will enter into agreements with the local cooperating partners to provide the required services. Terms of reference (TOR) for these services are provided in Annex 4, Terms of Reference for Agricultural Consultants. The TORs for the LIU technical staff (Agri-technical Manager, Agri-Environmental Manager, Agri-Economic Manager, Information Officer, Agri-Environmental Manager, and Coastal Activities Coordinator) are presented in Annex 5, Local Implementation Unit Technical Expertise.

Table 4. LIU Partners and Responsibilities by Activities

Country	Local partners (LIU)	Main responsibilities (Activities)
Estonia	-Jäneda Training and Agricultural Advisory Services, -Tallinn Technical University -Tallinn Technical University -Väinameri Area Task Team -Pärnu District Administration	-Agricultural Interventions -Demonstration of nutrient recycling -Monitoring and Assessment -ICZM Väinameri -ICZM Pärnu Bay
Latvia	-Latvian Agricultural Advisory Center -Latvian Agricultural University -Latvian Agricultural University -Engure/Ķemeri Area Task Team	-Agricultural Interventions -Demonstration of nutrient recycling -Monitoring and Assessment -ICZM Engure/Ķemeri
Lithuania	-Lithuanian Agricultural Advisory Service -Lithuanian Water Management Institute -Šilutė District	-Agricultural Interventions. -Monitoring and Assessment -ICZM Nemunas Delta
Russia-Kaliningrad Region	-Kaliningrad Institute for Agro-business and Retraining of Specialists. -Slavsk District - Slavsk District	-Agricultural Interventions -Demonstration of nutrient recycling -ICZM Nemunas Delta

74. *General Geographic Context.* Five demonstration river basins have been identified within the recipient countries (refer to Table 5), where the demonstration activities will take place. The demonstration watersheds are described in Table 6, while Table 7 lists the coastal zone management demonstration sites.

75. *The Agri-environmental Sensitive Areas (ASA).* The ASAs are within the five river basin modules (refer to Table 5). The ASAs are quite large, comprising districts and municipalities with soil- and bedrock conditions known to increase losses of nutrients. Agricultural production in these areas has a major impact on ecosystems of the local and distant water bodies. The BSRP in these areas will offer the farmers and the local authorities the capacity building, training and on-farm environmental investment activities. Both the headwater and downstream areas are included in the ASAs. The headwater areas comprise the regions with relatively intensive agricultural

activities, while the coastal areas enjoy less intensive agricultural practices, however they expose an immediate environmental impact on coastal waters. The local administrations, including both their agricultural and environmental departments will be engaged in the project activities. .

76. *Agri-environmental Demonstration Watersheds (ADW)*. The ADWs are smaller than ASA sand have been selected using the BAAP demonstration project criteria (refer to Table 5). The ADWs are located within the ASAs. The demonstration watersheds comprise typical small agricultural watersheds (10-30 km2) suitable for demonstration and monitoring. The primary objective is to attract outside farmers to come to the ADW to learn and be stimulated by the demonstration activities shown there. The second objective is to establish conditions feasible for monitoring the environmental impact from agriculture. Table 5. River Basin Modules for Component 2.

Country/ River Basin Modules	**Agricultural Demonstration Watersheds (ADW)**	**Agri-environmental Sensitive Areas (ASA)**	**Coastal Zone Management Task Area**
Estonia			
Area-based intervention to protect drinking water	Jäneda/ /Selja River	Karst region of northern and central Estonia/ Järvamaa County	
Kasari River Basin/Matsalu Bay Area	Rägina/ /Rägina River	Western Estonia/ Läänemaa County	Väinameri Area
Pärnu River Basin/Gulf of Riga Area	Kabala	Central Estonia/ Järvamaa County Lääne-Viru County	Pärnu Bay and Kihnu Strait
Latvia/Lithuania			
Daugava River/Gulf of Riga	Skrīveri/		
Lielupe River Basin/Gulf of Riga /Transboundary river	Bērze /Latvia Mellupīte/Venta River/Latvia Šiauliai/Bariūnai farm/ /Lithuania	Lielupe Drainage Basin in Latvia and Lithuanian districts: Šiauliai District Biržai District Joniškis District	Engure-Ķemeri Area
Lithuania/Kaliningrad Region			
Nemunas River Basin/ Kuršių Lagoon Area Transboundary river	Graisupis/ /Lithuania Šilute/ /Lithuania Pobedinskoe farm/Kaliningrad	Central Lithuania, Kėdainiai Region Ukmergė Region Slavsk District	Nemunas Delta area and Kuršių Lagoon / Transboundary delta
Kaliningrad Region/Poland			
Vistula River Basin/Kaliningrad Lagoon/Vistula Lagoon Area	Polish Rural Environment Protection Project	Polish Rural Environment Protection Project	Kaliningrad Lagoon / Vistula Lagoon

Table 6. Characteristics of Agri-environmental Demonstration Watersheds (ADW)

Country and name	**Status**	**Catchment area ($km^{2)}$**	**Number of farms**	**Name of Entering river**	**Flows into the Baltic Sea At:**
Estonia					
Kabala	BAAP established	22.5	23	Pärnu River	Gulf of Pärnu
Jänijõgi	New GEF	23.7	5	Jagala River	Gulf of Finland
Matsalu	BAAP established	21.3	14	Rägina River	Matsalu Bay
Latvia					
Mellupīte	BAAP established	9.6	18	Venta River	Baltic Proper

Bērze	Gulf of Riga Project established	3.6	17	Lielupe River	Gulf of Riga
Lithuania					
Graisupis	BAAP established	13.7	14	Nemunas River	Kuršių Lagoon
Bariūnai	BAAP established	One field Farm yard	1 Large scale	Lielupe River	Gulf of Riga
Šilutė	New GEF	TBD	TBD	Nemunas River	Kuršių Lagoon
Vardas	BAAP established	7.5	20	Nemunas River	Kuršių Lagoon
Kaliningrad Region					
Pobedinskoe	New BAAP	One field Farm yard	1 Large scale	Nemunas River	Kuršių/Kurshsky Zaliv Lagoon

Table 7. Description of Coastal Zone Management Task Areas (ICZM)

Country/Site	Status of Management Plan	Related Watershed Demonstration Area	Area of Baltic Sea
Estonia			
Väinameri	Management Plan prepared under Haapsalu and Matsalu Bays Environment Project	Matsalu	Matsalu Bay
Kihnu	Management Plan to be prepared under Project	Kabala	Gulf of Pärnu
Latvia			
Engure/ Ķemeri	Management Plan prepared under HELCOM PITF MLF Phase IA and IB	Bērze	Gulf of Riga
Lithuania and Kaliningrad Region			
Nemunas Delta/ Kuršių Lagoon	Management Plan prepared under Klaipėda Environment Project	Šilutė	Kuršių Lagoon
	Management Plan prepared under HELCOM PITF MLW Phase IA and IB	Pobedinskoe	Kuršių Lagoon
Kaliningrad Region/Poland			
Kaliningrad Region/Vistula Lagoon	Management Plan prepared under HELCOM PITF MLW	Elbląg (Included in Rural Environmental Protection Project)	Kaliningrad Lagoon/Vistula Lagoon

Activity 1. Agricultural Interventions

77. *Introduction to Activity 1.* In all five recipient countries, the most intensive agricultural production is located in the fertile upstream flood plains. Some areas (northern part of Estonia and northern part of Lithuania) are on karst bedrock, which is particularly sensitive to infiltration of nutrients. Losses of nutrients are extensive as a combination of (a) the almost complete absence of manure storage facilities in animal production, and (b) poor preparation of seed bedding, which causes inefficient recycling of nutrients and low harvests in crop production. The BSRP will assist the countries in developing a more environmentally sound and resource efficient agriculture. HELCOM's member countries have adopted Agricultural Annex III to the Helsinki Convention, which is specific in its recommendations concerning nutrients and pest management. In addition, Estonia, Latvia and Lithuania have adopted Codes of Good Agricultural Practice (CAP) as part of their accession to the European Union.

78. *Objectives*.

- Increasing of environmental awareness and the use of environmentally sound practices by farming community .

- Develop tools and mechanisms for financing and evaluating environmental investments at farm level.

- Demonstrate cost-effective interventions for improving recycling and retention of nutrients.

79. *Participants and Organizational Arrangements.* The participants under Activity 1 include: the local farmers and local community; the AAS, and local authorities dealing with agricultural sector, environmental control and enforcement authorities. The Component 2 will primarily target commercial farmers producing for a market outside the own household, but will not exclude household farmers.

80. *Geographical Context.* The Agricultural Interventions will take place in the ASAs as identified in Table 5. Individual farms located outside the ASAs, with a significant environmental impact also m ay apply for participation in BSRP.

Sub-activity 1(a) Local Agri-Environmental Capacity Building

81. *Introduction.* Although the AASs have participated in a number of international projects to promote environmentally sound agriculture, the gaps between best available practices and the day-to-day practices exercised by farmers in recipient countries are considerable. Farmers from ASAs will be invited to participate in education and training programs to improve their knowledge on sustainable farm management. Local authorities will be invited to participate in courses addressing the control of non-point source pollution. Training activities will range from simple evening seminars to comprehensive courses in environmental farm management. The training and outreach activities will be related, when applicable, to coastal zone management and marine activities. The LIUs, assisted by international consultants will have the over-all responsibility for implementing this sub-activity.

Task (1) Marketing of the Training Packages and Outreach Activities

(a) Marketing of the BSRP training activities, targeting the farmers will be carried out by the LIUs using the district offices and advisors of the AAS. The marketing activities will also target other stakeholders as appropriate.

(b) The Information officer will coordinate marketing of training and out-reach activities.

(c) The AAS', using the criteria as identified in Table 8 below, will assess the eligibility of farmers to participate in the training courses

Table 8. Participation Eligibility Criteria

Criteria	Environmental Management Systems (EMS) Training
Type of business	Farms with animal and crop production. Private machine companies and cooperatives
Location of farm	ASA (The mentioned Agri-environment Sensitive Areas, ASA)
Size of farm	>20 Milking cows or animal units (AU) >20 hectare of arable land
Ownership	Private ownership, agricultural companies, Long-term lease contracts
Record of bookkeeping	Yes
Course contract	Yes
Course fee	Symbolic

Table 9. Training Package Type and Proposed Participation

Training Package: Number and type	Est. No. of activities	Est. No. of participants	Est. duration (days)	Target-groups
#1. Agri-environmental objectives and tools for ecosystem management	50	500	4	Advisors, technical experts and food processing companies.
#2. Environmental Management Systems	20	300	8 Seminars 8 Individual consultations	Farmers and Agricultural Companies (AC) Rural entrepreneurs

Table 10. Training Package Descriptions

Package Number	Training Package Description
#1	The purpose is to develop a deeper understanding of the ecosystem management goals and to sequence the actions accordingly. Participants in this training package are technical and administrative personnel to be involved in any sub activity of C2 and district advisors of the AAS as well as local authorities and NGOs.
#2	"The Environmental Management System Course (EMS)" is a specialized and comprehensive training course for farms with more than 20 cows or animal units. The course includes 8 days of seminar and 8 days of individual advice. The course includes the implementation of Environmental Management Systems (EMS) including Environmental Audits. After the course, the participants have the possibility to apply for investment support within the project (GEF grants and/or NEFCO soft credit).

Table11. Training Courses for Local Agri-environmental Capacity Building by Country

Package	Total Number of Courses	Estonia	Latvia	Lithuania	Russia - Kaliningrad Oblast
#1	12	3	3	5	1
#2	10	2	2	2	1

Sub-activity 1(b) Demonstrating Cost-effective Nutrient Recycling and Retention Technologies

82. *Introduction.* This sub-activity will support the existing demonstration facilities, promote the nutrient recycling and fund new investments for increased retention of nutrients, including constructed wetlands. In a limited number of locations the "low" technology approaches for wastewater treatment in households and small settlements will be supported. This activity includes several small-scale investments used for demonstration- and outreach purposes. The LIU will have the over-all responsibility for implementing this sub-activity. International experts will assist the local partners as needed. During the Phase 1, i.e. (the first two years of the project), the technical specifications and drawings for the investments will be developed under the supervision of the LIU Director. The formal approval of applications for funding using the GEF funds is

delegated to the Project Implementation Team (PIT) in coordination with the LIU Director, on behalf of HELCOM.

Table 12. BSRP Demonstration Sites for Improved Recycling and Retention of Nutrients

Country/ River Basin Modules	Activity	Location/ADW	Type of demonstration
Estonia			
North karst region of Estonia	a) Agricultural interventions	a) Jäneda ADW	a) Agri-environment measures
Kasari River Basin/Matsalu Bay Area	a) Agricultural interventions b) ICZM	a) Rägina ADW Kahametsa b) Väinameri area	a) Agri-environment measures, experimental site for controlled drainage of agricultural fields b) ICZM measures.
Pärnu River Basin/ Gulf of Riga	a) Agricultural interventions b) ICZM	a) Kabala ADW Kabala ADW b) Kihnu Island	a) Agri-environment measure small-scale naturally based sewage-treatment facilities b) Small-scale naturally based sewage-treatment facilities
Latvia/Lithuania			
Daugava River/Gulf of Riga	a) Agricultural interventions	a) Skrīveri ADW	a) Agri-environment measures
Lielupe River Basin/ Gulf of Riga	a) Agricultural interventions b) ICZM	a) Bērze ADW Mellupīte ADW/Venta River Bariūnai Farm b) Engure- Ķemeri	a) Agri-environment measures Agri-environment measures Large-scale farming interventions b) Local business incubator
Lithuania/Kaliningrad Region			
Nemunas River/ Kuršių/Kurshsky Zaliv Lagoon Area	a) Agricultural interventions b) ICZM	a) Graisupis / Vardas/Lysena/ Šilutė ADW Pobedinskoe farm/Kaliningrad b) Delta area	a) Agri-environment measures, constructed wetlands, household waste water treatment, agri-environment measures in flooded areas, large-scale farming interventions b) Restoration of wetlands, ICZM measures
Kaliningrad Region/Poland			
Vistula River Basin/Kaliningrad Lagoon/Vistula Lagoon Area	a) Agricultural interventions b) ICZM	a) Polish Rural Environmental Project b) Delta area	a) Agri-environment measures b) ICZM measures
St Petersburg Region			
Neva River/Gulf of Finland	a) Agricultural interventions	To be determined	a) Interventions in large-scale farms

.

Task (1) Construct on-farm installations to demonstrate environment friendly agricultural practices

(d) Identify appropriate agri-environmental demonstration measures to include but not limited to (i) demonstration of manure storage and handling, and (ii) experimental plot- and field level, controlled drainage, and nutrient balance calculations. Some of the demonstration facilities for this purpose are already constructed within the BAAP but some additional ones will be funded within the GEF Project.

(e) Arrange and execute field days arranged in the ADW.

Task (2) Restore Wetlands

(a) Identify and prepare wetland restoration plans as a cost-effective measure to reduce nutrient run-off to coastal waters. Restored wetlands in the delta areas will also enhance biodiversity and fish spawning habitats.

Task (3) Construct Naturally Based Purification System for Nutrient Retention

(a) Identify localities for construction of small-scale household- and village sewage treatment facilities in rural areas of Estonia and Lithuania.

(b) Prepare technical specifications for small scale wastewater treatment installations

Sub-activity 1(c) Agri-Environmental Credit Scheme (AgECS)

83. *Introduction.* The BSRP will offer the qualified farmers (with more than 20 cows, or equivalent animal units, AU) in environmentally sensitive areas, access to the BSRP Agri-environment Credit Scheme. Through the combination of reasonable credit conditions and significantly improved efficiency in nutrient utilization at farm-level this sub-activity seeks to create opportunities for farmers to improve their socio-economic conditions. The long-term benefit of this sub-activity, in addition to the farm level investments, is the strengthening of the AAS capacities for assisting the farmers beyond the scope of this project.

84. As a part of the EU accession process, the beneficiary countries (except Russia) are preparing for meeting the requirements of environmentally responsible farm management. In that context, the farms of certain sizes will be required to construct proper manure storage facilities. Lithuania, for example, is planning to create the conditions for establishing manure storages within a ten-year period: (a) until 2006 all farms having more than 600 animal units should construct proper manure storages, (b) until 2008 all farms with more than 200 animal units should establish manure storages and (c) in 2011 all the farms with more than 10 animal units should have manure storages.

85. This BSRP sub-activity is perfectly timed to provide the necessary demonstration of possible construction and installation of specific environmentally responsible measures. The Agri-environment Credit Scheme (AgECS) will operate with five tools:

- Training of farmers to prepare environmental/management plans. Training of the farmers is conducted as described in sub activity 1 (a): Local agri-environmental capacity building. The training will provide the farmers with an opportunity to prepare the farm specific environmental- and management plans, including an investment plan. Based on the management plan, the farmer will be able to apply for a grant or loan offered by the BSRP.

- Offering of grants for investments in proper manure storage and spreading. The grant will lower total costs for the farmers and in the case of smaller farms with 20-50 cows be sufficient to make the investment economical feasible. The size of the grant is limited to a maximum of USD 20,000. The recipient farmer will contribute with an equivalent amount in cash or in-kind contributions as the grant. On top of the grant, the farmers with more substantial investment needs would be able to apply for a loan offered by the Nordic Environmental Finance Cooperation (NEFCO).

- Offering of nutrient balance calculations for monitoring the environmental investments. For the on-farm environmental monitoring, nutrient balance calculations will be prepared as a management tool reflecting the on-farm efficiency in retaining nutrients in produced food instead of loosing nutrients to the environment.

Table 13. Distribution in Farm Size according to Number of Livestock Units, Addressed by the Agri-Environment Credit Scheme

Size of farms in number of animal units, AU5	Average investment, USD Manure storage and handling	Number of farms addressed
20	18 900	6
50	38 000	6
100	69 500	6
200	111 600	12
Total		**30**

86. As mentioned, the AgECS will target investments in manure storage and handling as the primary investment. In addition, it will provide investments in improved technology for soil preparation and spreading of fertilizers. The environmental benefits of proper utilization of manure will reduce the leakage to surface and ground water and lower the need of importing mineral fertilizers. Improved soil preparation in terms of proper plowing and harrowing will increase the crop capacity for up-taking the nutrients from the soil and increase the yield. Modern technology for spreading of fertilizers will lower the doses needed, as the application is more precise and adapted to the crop-specific needs. The environmental benefits of reduced amounts of pesticides are primarily related to enhancement of biodiversity including the survival of small insects being important predators and prey in the agricultural ecosystem.

87. NEFCO will be responsible for management of the grant and soft loan. NEFCO will provide their services in cooperation with the AAS. An Agri-Economic Manager (LIU-ECOM) will be employed by the AAS to coordinate and prepare documents for projects in the pipeline for grants and loans or combinations of both. This sub-activity comprises the following institutional arrangements:

- Marketing and management of the EMS Courses is the responsibility of the LIU Agro-Economic Manager (LIU-ECOM) according to an agreement between BSRP and AAS.

- Management of the Credit Scheme is also the responsibility of the LIU–ECOM according to an agreement between NEFCO and AAS.

- Procurement of goods and civil works for construction of manure storages and handling systems is the responsibility of the farmer but supervised by the LIU Director.

- Implementation of the on-farm environmental management plans is the responsibility of the farmer.

- Monitoring and follow-up of the Credit Scheme is the responsibility of the farmer and NEFCO.

5 One Animal Unit (AU) corresponds to one milking cow or 30 fattening pigs or 2500 broilers.

Task (1) Appoint an AAS Credit Facilitator

(a) Appoint the LIU-ECOM in the AAS to facilitate, coordinate and assist the farmers participating in the AgECS and act as the link between the farmer (the Borrower) and NEFCO.

(b) Screen applications, streamline documentation, develop administrative routines, assist NEFCO in communication with the borrower and monitor the loan agreements.

(c) Consult with the other technical experts working in the LIU Team.

Task (2) Complete Farm Environmental/Management Plans (Farm E/MP)

(d) The AgECS facilitates the use of Farm E/MPs, prepared by the farmers, as a strategic management tool for planning, implementing and evaluating of their businesses.

(e) These plans are prepared as parts of the Environmental Management Systems Course (EMS) mentioned under Sub activity 1(a) Local Agri-environmental Capacity Building.

(f) The Farm E/MPs will:

  (i) Provide the farmers the necessary basic environmental and financial management tools needed in applying for the grant and/or the loan.

  (ii) Include the economical and environmental analysis, resulting in business management plan as part of the Farm E/MPs.

  (iii) Be combined into the strategic development plan for the farm. Nutrient Balance Calculations at farm level will be used for assessing inputs, output and efficiency in nutrient retention at the farm.

(g) With the documentation from the EMS Course, the farmer would be well situated to apply for financing from either from commercial banks, the SAPARD or the BSRP AgECS.

Task (3) Screening Farmers and Investment Eligibility

(a) Screening farmers' eligibility for farm investments is the second step in the AgECS process. The eligible farms should be in sound economic shape and should be able to demonstrate the basic possibilities for implementation of the proposed investment, including the own in-kind contributions and ability to repay t the loans. The economic and environmental parameters of the applicant farms will be evaluated by the AAS Credit Facilitator

(b) The proposed investments should have a verifiable environmental benefit and be a significant step towards the farmer's compliance with the Codes of Good Agricultural Practices (CAP).

(c) Investments in farm machinery such as high quality seeding machines; harrows, cultivators, ploughs, mineral fertilizers and pesticide sprayers and others may also be beneficial to the environment and can be included as eligible investments.

Task (4) Apply and Approve the Grant and Loan

Upon completing the Farm E/MP, farmers may apply a grant or loan, which is the third step in the AgECS process application.

(d) The LIU-ECOM will assist the farmer in preparing the application documents.

(e) Application will be sent to NEFCO for review.

(f) When NEFCO is satisfied with the application, the proposed investment project will be presented together with information about the Borrowers financial situation (and possible security to be offered for the loan) to NEFCO's Investment Committee for final approval.

(g) NEFCO will communicate back to the LIU-ECOM through a formal Loan Proposal containing the main terms and conditions for the Loan.

(h) The AAS will inform the Borrower, who will be expected to confirm in writing that the Loan Proposal is accepted, before NEFCO instructs a legal counsel to prepare the necessary documentation, including security documents and legal opinion to NEFCO.

(i) The NEFCO Legal Counsel will coordinate with the LIU-ECOM who will support the Borrower in drafting the Project Description, based on a model prepared by NEFCO, which will be annexed to the Loan Agreement. The Loan Agreement will include regulations for when and how the loan will be disbursed.

(j) NEFCO will enter into an agreement with a local law office. In Estonia and in Lithuania such agreements have already been established for handling similar tasks for Cleaner Production credits supported by NEFCO.

(k) Documents will be completed in English and in the local language.

Task (5) Prepare Project Description

(a) The LIU-ECOM will assist the farmer preparing the Project Description. The Project Description, as part of the Borrowers application, will include:

  (i) The analysis and management plans from the EMS Course will be adjusted and completed to meet the requirement of an investment project and bank document.

  (ii) Economical and technical specifications will be added accordingly.

(b) The farmer can join the scheme in the form of a sole Grant Project, Loan Project or a combination of a Grant and Loan Project:

  (i) *Sole Grant Projects* target investments for manure storage and spreaders at farms with 20-50 animal units. The grant will cover maximum 50% of the

investment costs. The grant is maximized to USD 20,000 which would allow farms of this size to invest in proper constructions. If needed, additional investments in soil preparation technology and in-stable manure handling systems will require additional loans on top of the grant. Sole Grant Projects are processed the same way as loan projects.

(ii) *Sole Loan Projects* target investments at farms with pure crop-production or at animal producing farms with already existing proper manure storage facilities. Loan projects are also interesting for entrepreneurs offering machine services for groups of farmers at a local basis. The entrepreneurs can improve their services through offering modern soil preparation technology, which helps the farmers to improve their yields and environmental management. Individual loan projects have a minimum of USD 20,000 and maximum of USD 200,000.

(iii) Combinations of Grant and Loan Projects target larger farms with environmental management plans including major investments in manure storage facilities beyond those that qualify for financing through the grant. The environmental plan can also include investments for improved soil preparation technology to complement the basic investments in manure storage constructions. Combinations of the grant and loan could also be used by smaller farms, which want to use the grants for investments in manure storage construction and the loan for additional environmental investments.

Task (6) Disburse Grant or Loan

(a) The fourth step will be the disbursement of the grant or loan. The AAS will:

(i) Monitor and consult the Borrower prior to disbursement and issuing to NEFCO a written report as to the progress and costs incurred for the investment as compared to the plan.

(ii) Forward to NEFCO the English translation of the request for disbursement made and signed by the Borrower in the local language.

(iii) Prepare a comprehensive completion report before the last disbursement.

(b) NEFCO will disburse as instructed by the Borrower. This may include: pay directly to a supplier (with which the Borrower has a contract – of which NEFCO will be provided a copy translated into English by AAS) local or foreign Supporting documentation such as invoices shall be sent together with the Disbursement requests.

Task (7) Quality Assurance of Manure Storage Constructions

(a) For a farmer, the project shall not be different from any other investment project, when some work can be done by him/herself and some work is contracted. As a part of the quality assurance process, the construction of manure and urine storage will be closely monitored by the LIU-TEM.

(b) All - constructions will be based on approved Swedish standards and technical specifications used for the same purpose.

(c) The construction phase will be monitored and the constructions examined after completion by the LIU-TEM.

(d) The LIU-TEM will assist in design and preparation of drawings and technical specification included in the Project Description. Costs for the design work will be carried by the farmer and included in the loan agreements, creating a commercial demand on the services provided by the AAS.

Task (8) Procure the Works for Construction of the Manure Storage and Equipment

(a) The fifth step of the AgECS process is the procurement of equipment, goods and civil works. For procurement services, the LIU, will:

(i) Follow World Bank procurement guidelines;

(ii) Shortlist a number of pre-qualified companies in each country that are willing and able to provide the construction services.

(b) The farmer will:

(i) Invite a minimum of three of the shortlisted companies to prepare bids for the farm specific needs.

(ii) Evaluate the bids assisted by the LIU-Team.

(c) The construction work can be divided into five main activities: excavation, support layer, formwork, casting and refilling and landscape planning. Dependent on the farmer's own resources it will be cost-effective to do some of these activities as his/her own work.

For reference, Table 14 illustrates the differences in costs when own and hired work is used for investments at different farm sizes.

Table 14. Specification of Costs for Construction of Manure Storage
Thousand USD (Estonia, 2000)

Type of cost	Farm size, number of milking cows							
	20		50		100		200	
	Estimated total costs, thousand USD							
	Hired	Own man.	Hired	Own man.	Hired	Own man.	Hired	Own man.
Planning	0.8	0.8	1.5	1.5	5	5	20	20
Construction	13.2	9.3	30	20.4	54	37	83.1	56.5
Equipment	3.5	3.5	3.5	3.5	7	7	20	20
Total	*17.5*	*13.6*	*35.0*	*25.4*	*66*	*49*	*123.1*	*96.5*
Manure spreading								
Total	*2.2*	*2.2*	*4.5*	*4.5*	*8.5*	*8.5*	*8.5*	*8.5*
Grand total	***19.7***	***15.8***	***39.5***	***29.9***	***74.5***	***57.5***	***131.6***	***105***

Task (9) Monitor the Progress of Investment Projects

The sixth step of the AgECS process is monitoring the outcome of investments. The farmer will be responsible for implementation of the environmental investment plan and for reporting data and information in a pre-designed format. The farmer will:

(a) Report to NEFCO according to the loan agreement.

(b) For on-farm environmental monitoring, nutrient balance calculations will be prepared by the farmer as a management tool reflecting the on-farm efficiency in retaining nutrients in produced food instead of loosing nutrients to the environment. The farmer has to prepare the nutrient balance calculations at his/her own cost, which will be shown as farmer's contribution toward the entire project cost.

(c) the NEFCO, assisted by the LIU-ECOM will monitor implementation of the loan agreements

Task (10) Strategy for Sharing Experience from the Agri-Environment Investment Scheme

(a) As a pilot activity, the AgECS is an innovative effort to combine farmer's interest in developing the businesses with society's interest in lowering environmental risks. The LIU Director, supported by international experts, will be responsible for this Task. The experience gained will be shared with the main stakeholders: farmer's organizations, financial institutions, and authorities.

Task (11) International Assistance for Complementary Training

The BAAP has contributed to preparation of BSRP with the following activities: the AgECS Environmental Audit Scheme has been developed and tested, curriculum for the Environment Management Systems Course (EMS) has been developed and adapted to the country specific conditions, modern technology for manure storage and handling on small- and large scale farms have been demonstrated.

(a) Training for the LIU-ECOM (the same person as the Credit Facilitator) for managing the EMS Courses and the loan agreements.

(b) The LIU-TEM will need qualified training in the design and construction of manure storage and handling systems and in the quality assurance process involved in construction and type-approval.

(c) The LIU-ENVM will need qualified training in nutrient balance calculations, which will be used for management, and monitoring of the activity.

Activity 2. Monitoring and Assessment of Non-Point Source Pollution

88. *Introduction to Activity 2.* The Monitoring and Assessment is essential for preparation of joint ecosystem based assessments between land-based and marine activities of BSRP. The assessments will provide with the land and coastal management tools and recommendations for sustainable ecosystem management. This activity will establish an in-stream network to monitor and assess nutrient outputs from agricultural watersheds and assess innovative methodologies for non-point source pollution retention. The activities will build on and extend the already

established regional network of monitoring within ADW. Monitoring and assessment will be conducted by: (a) direct measurements in various types of water recipients and (b) indirect measurements to monitor indicators that are relevant for assessing the potential impacts of agriculture. Both parts are essential for a complete future monitoring system, provided the data meets the national and international reporting requirements.

89. In addition to meeting specific national needs, the monitoring activity will have a regional perspective. Furthermore, it is important to emphasize the "sustainability" of the monitoring strategy. One way to enhance the sustainability is to design and implement the monitoring programs so that they are also suitable and attractive for research and educational purposes. For these reasons, it is also important that the applied measuring methods and procedures are sufficiently advanced to comply with international scientific standards. The monitoring activities will as far as possible be located to the same catchments that are included as demonstration watersheds. The incremental costs will include limited maintenance and water analysis, upgrade of equipment and in some cases construction and installation of in-stream monitoring posts, data-logging equipment, and construction and initial maintenance of nutrient retention features.

90. *Objectives*.

- Strengthening decision support for water management from inland agricultural areas to coastal areas. Improve the decision making in water management sector due to availability of better monitoring data.

- Establish a regional monitoring network on non-point source pollution;

- Collect background data on nutrient and pesticide run-off from representative agricultural areas, in order to support national authorities in developing sustainable agricultural production systems and in meeting the data reporting requirements to various regional and international organizations (e.g. HELCOM PLC, EU, OECD).

- Provide information on the agricultural contribution to the load of nutrients, and other potential harmful substances, to the marine/coastal zone environment.

- Demonstrate the efficiency of different nutrient reduction measures.

- Motivate farmers to be active partners and "good examples" in developing sustainable and environmental sound agricultural practices.

- Provide a basis for capacity strengthening of the research - and educational institutions.

91. *Participants and Institutional Arrangements.* The LIU will have the over-all responsibility for the managing the activities involving the local experts from universities and institutions engaged in similar activities under the BAAP and the Norwegian funded Gulf of Riga project. Table 15 identifies the names and organizations participating in this sub-activity. ToRs for services required are in Annex 5, Terms of Reference for LIU Technical Consultants, Attachment 6 for the Monitoring and Assessment Manager (LIU-MAM). Annex 4, Terms of Reference for Agricultural Consultants, describes the activities related to establishment of monitoring sites, knowledge/technology transfer including training in operation/maintenance of monitoring stations, establishment of regional database for collected data. ToRs for international

assistance in modeling are included as Attachment 2 in Annex 4 for the Monitoring and Assessment Coordination (C2-MAC).

92. *Geographic Context.* Monitoring and assessment activities will take place in the ADW as identified in Table 15. For Kaliningrad, the Project proposes a moderate program at the demonstration farm of Pobedinskoe, where the main purpose is to get indicative figures on the effects of farm activities on the surface water quality. Qualitative rather than quantitative figures will be emphasized, and for this reason there will only be a water sampling program in the main channels/streams without any investments in fixed discharge measurement structures and advanced measuring equipment.

Sub-activity (2a) Catchment Monitoring Programs

93. *Introduction.* Within the Monitoring and Assessment activity, the catchment monitoring programs will include the measurement of nutrient load reaching the surface waters from representative agricultural areas, and the measurement of leaching of nutrients to shallow ground water in representative agricultural areas.

94. *Sub-activity Tasks and Geographic Context.* The surface and groundwater monitoring programs will be integrated into existing national networks and establish new networks, where needed. Table 15 provides with an overview of the sites and activities in the catchment-monitoring program. In each country the following activities will be conducted:

- Surface water monitoring:
  - ◊ Evaluate sites and define monitoring equipment needs.
  - ◊ Procure equipment.
  - ◊ Install equipment.
  - ◊ Establish and operate network.
- Shallow ground water program:
  - ◊ Evaluate sites and define monitoring equipment needs.
  - ◊ Procure equipment.
  - ◊ Install equipment.
  - ◊ Establish and operate network.

Table 15. Overview of Catchment Monitoring Program

Activity	**Estonia**			**Latvia**			**Lithuania**		
	Jänijõgi	Räpu	Rägina	Mellupite	Berze	Skriveri	Graisupis	Vardas	Lysena
Ground water observation	X	X	X	X	X		X	X	X
Monitoring runoff + water quality	X	X	X	X	X	X	X	X	X
Meteorological station	X	X	X	X	X	X	X	X	X

Monitoring runoff + water quality, drainage station.				X	X				

Task (1) Estonia: Surface Water Monitoring and Shallow Ground Water

Surface water monitoring, will take place in three demonstration watersheds and will be included in the surface water-monitoring program. Two of the demonstration watersheds already exist and they are financially supported through BAAP (Rägina and Räpu), whereas the third catchment (Jänajõgi) is new and needs to be fully financed through the current project. The first two catchments need minor upgrading. These catchments will also be included as demonstration watersheds (BAAP).

(a) A shallow ground water monitoring program will be established in Rägina, Räpu and Jänijõgi. The installation as well as the operation and maintenance need to be fully financed using the GEF Grant proceeds.

Task (2) Latvia: Surface Water Monitoring and Shallow Ground Water

Three catchments will be included in the surface water-monitoring program: Mellupīte already exists as apart of the BAAP, (needs minor upgrading), Bērze exists, but needs substantial upgrading (weirs, electricity supply, etc), and Skrīveri, which will be a new catchment is located to the lower part of the Daugava basin. All these catchments will be included as demonstration watersheds. Upgrading and establishment of the new catchment is to be financed using the GEF Grant proceeds.

(a) A measurement program for shallow ground water will be established in Mellupīte, Bērze and Skrīveri. The installation of wells, and the operation and maintenance has to be fully covered using the GEF Grant proceeds..

Task (3) Lithuania: Surface Water Monitoring and Shallow Ground Water

(a) Three catchments will be included: Lysena, Graisupis and Vardas. Two of the catchments, Graisupis and Vardas, were equipped as demonstration watersheds under BAAP. In all three catchments, there is a need for substantial technical upgrading of the existing monitoring stations to be financed through the current project.

Task (4) Monitoring of Pesticide Residues in Water

(a) Due to the potential hazardous effects to the environment when applied in agriculture, pesticides need to be included in the list of parameters to be analyzed. However, the current analytical capacity may be a constraint, thus the practical aspects of including pesticides need to be further elaborated in first part of the implementation phase of the BSRP. Nevertheless, investments in equipment should take care of the specific material requirements for pesticide sampling (to avoid contamination of water samples). This is particular important for "permanent" installations such as ground water sampling wells.

Sub-activity 2(b) Effects of Specific Demonstration Activities

95. *Introduction.* This sub-activity will monitor the effects of specific demonstration activities. This will include monitoring of plot demonstration activities concerning crop rotation

systems and optimal fertilizer use, and monitoring of natural and constructed wetlands and other hydrological manipulated systems in retaining nutrient runoff from diffuse sources, household, and animal farms. The demonstration activities will take place at sites identified in Table 16.

Task (1) Latvia: Monitoring the Effects of Demonstration Activities

Effects of crop rotations systems and different level of manure/nutrient applications on leaching losses will be demonstrated and monitored in a plot trial in Mellupite. The site is already established through previous BAAP activities. In addition similar demonstration activities will be initiated at the Skriveri catchment, financed by the BSRP.

Sub-Activity 2(c) Monitoring of Agricultural Hot Spots and Contamination of Drinking Water in Farm Wells

96. *Introduction.* This Sub-activity will monitor and evaluate the level of contamination of drinking water in farm wells, and monitor contamination of surface- and ground water at local "hot spots" - refer to Table 17.

Task (1) Estonia: Contamination of Drinking Water at Private Farm Wells

(a) Sample the water quality, 4-6 times per year in private drinking water wells in the ADWs, to document possible contamination, and eventual improvements due to changes in farm practices.

Task (2) Latvia: Contamination of Drinking Water at Private Farm Wells

(a) Sample the water quality, 4-6 times per year in private drinking water wells in the ADWs, to document possible contamination, and eventual improvements due to changes in farm practices.

(b) Monitor local hot spots, identified from previous investigations, which indicated very large losses of nutrients from large animal farms, particularly in pig production. "Area-point-sources" may be an illustrative characteristic. It is proposed to include three sites in Latvia, where a simple measurement program would be applied to document the losses of nutrients to surface water and ground water. Except for installation of ground water wells, there will be no investments in permanent measuring structures/stations.

Task (3) Lithuania: Contamination of Drinking Water at Private Farm Wells

(a) Sample the water quality, 4-6 times per year in private drinking water wells in the ADWs, to document possible contamination, and eventual improvements due to changes in farm practices.

(b) Monitor local hot spots, identified from previous investigations that indicated very large losses of nutrients from one agricultural company Bariūnai, Lithuania, which was selected for monitoring the effects of the improved manure and nutrient leakage management. The main activities in this farm are production is milk and livestock breeding. The company owns 600 milking cows in addition to 3000 pigs and 4000 weaners.

Table 16. Locations of "Hot Spot" and Drinking Water Quality Monitoring

Activity	Estonia	Latvia		Lithuania
		Ogre	Bauska	Bariūnai
Hot Spots				
Water Sampling		X	X	X
Drinking Water				
Water Sampling	X	X	X	X

Sub-activity 2(d) Modeling of Nutrient Loads in Bērze Lielupe Basin, the Gulf of Riga and Selected National Watersheds

97. *Introduction.* The measurements will primarily focus on nutrients (Nitrogen and Phosphorus), but other parameters with biological effects in freshwater and marine waters need to be further considered in conjunction with Component 1 (through a joint workshop). Due to the costs considerations and due and practical aspects, it is regarded as not practical to measure the complete load of nutrients and other substances generated by agricultural activities. The spatial/regional variability in losses can be very large, due to natural conditions and differences in agricultural practices. Thus, the practical approach is to conduct monitoring in representative pilot areas featuring typical conditions with regard to climate, soils, crops, and management practices. However, from the viewpoint of the marine environment and the regional/drainage basin level management it is a prerequisite to know the total effects/contribution from agricultural activities. Specific tools (models) are therefore needed to up-scale the monitoring results from pilot areas to the regional level. For this reason, the modeling and monitoring will be integral parts of the agricultural run-off management schemes.

98. The experiences in modeling are not particularly well developed in the recipient countries. Therefore, a comprehensive training and upgrading of the modeling competence is considered a significant contribution to the regional capacity building in management of agricultural run-off. The specific activities comprise training courses and transfer of knowledge, collection of data needed for parameterization of deterministic models, and establishment of a multi-scale empirical datasets to validate and test the model performance. The modeling approach will be linked to ongoing activities at SLU and SMHI in Sweden, and will be carried out under the supervision from SLU.

99. Watershed models can be extremely powerful tools to assist in the development, implementation, and defense of practical management strategies. The activity will use existing models used in the region, to include the Transport Retention and K(S) Source model (TRK), and the SOIL (soil hydrology), and SOIL-N model for nitrogen modeling, and a corresponding model for phosphorous. These models will be integrated into a watershed model. All the models are based on a GIS platform and will be integrated with the GIS Coordination Center in Vilnius, which will coordinate with the GIS developed under the current HELCOM PLC4 Project. This modeling activity will establish an empirical link between components 1 and 2, a multi-scale monitoring approach is proposed for the Bērze-Lielupe basin. This will include water quality and load measurements at field and small catchment level (Bērze), medium sized river level (Bērze River) and in different locations in the Lielupe River, and link with the coastal monitoring in the Gulf of Riga. The main task under this activity will be compilation and systematization of the collected data, and a further linkage to specific modeling activities described later in this document. This multi-scale approach will facilitate the "communication" between components; this would include sub-activity 4(d) MMED demonstration activity.

100. Additional measurements are needed to support modeling and up-scaling of results from pilot scale in the ADW: (a) data on various soil parameters for parameterization and calibration of

dynamic models for diffuse sources (SOIL/SOILN/HBV-N), and (b) multi-scale monitoring approach to establish an empirical link between land – coastal areas and marine environment.

101. The demonstration activity will take place in the Bērze Lielupe basin and the Gulf of Riga and selected national watersheds as part of phase 3. The participants will be the LIU-MAM, C2-MET, C2-MAC, BSRP Coordinators, Latvian Hydrometeorological Agency, the Coordination Center for Productivity Parameters, Institute of Aquatic Ecology in Riga, and the GIS Data Coordination Center in Lithuania.

Task (1) Establish a Model Expert Team (MET)

(a) Coordinate a local technical team of nationally recognized specialists on water quality, planning and modeling to provide scientific and technical modeling expertise, this group will be called the Model Expert Team (MET).

(b) MET will work closely with the BSRP team, Latvian Hydrometeorological Agency, and the BSRP-GIS Center to execute the responsibilities of applying the model and evaluating the results.

(c) Participate in training courses for model application.

(d) MET will review technical aspects of the model work plans, work in progress, planned actives, and model output.

(e) MET will provide advice to the BSRP Coordinators and the Baltic Sea Steering Group.

Task (2) Select Watershed-Coastal Model

(a) Review literature and regional programs used and acceptable by HELCOM. This would include the TRK concept, based on the SOIL/SOIL-N model, P-Model and the HBV model.

(b) Assess if existing monitoring programs provide the data at the temporal frequency and spatial coverage necessary through the basin coastal area, and whether it is necessary to link together more than one model to answer assessment questions.

Task (3) Apply and Assess Watershed Model

(a) Apply the TRK concept using the SOIL/SOIL-N and HBV models, and integrate them into the BSRP geographic information system (GIS), national watershed data, and state-of-the-art environmental assessment and modeling tools into one convenient package which:

- Facilitates examination of environmental information.
- Provides an integrated watershed and modeling framework.
- Supports analysis of point and non-point source management alternatives.

(b) If necessary collect additional data needed for the parameterization and calibration of the TRK model.

(c) Compile results and assessment and provide recommendations to the Baltic Sea Steering Group.

Activity 3. Land-Based Coastal Zone Management

102. *Introduction to Activity 3.* The BSRP will support the capacity building and small scale investment activities in six coastal wetlands along the eastern and southern coast of the Baltic Sea. They were selected by the HELCOM Working Group on Management of Lagoons and Wetlands back in 1993 due to particularly valuable biological diversity and local fisheries conditions. HELCOM-MLW has been responsible for elaborating Integrated Coastal Zone Management (ICZM) plans for these priority coastal areas in the Baltic Sea Region. The areas were selected because they are the so-called multi-purpose ecosystems (i.e. important as breeding and feeding areas, and as nutrient traps for nutrient-rich river water before entering the sea). As 70-80 % of the pollution to the Baltic Sea emanates from land-based sources, the improved planning and management of coastal areas is of crucial importance for improving the ecological situation in the Baltic Sea. WWF has acted as lead party for the implementation of the ICZM plans,

103. The ICZM plans offer opportunities to implement coastal conservation measures, improve environmental management, strengthen local capacity, explore opportunities for small-scale business and tourism development, and improve business management. Coastal conservation measures would include ecosystem rehabilitation and restoration and environmental clean up. The social assessment process will provide guidance on how to facilitate local community involvement in decision making. The proposed outreach program will be used to expand these activities to other coastal communities. The existing management plans will serve as the framework for implementing this activity.

104. *Objectives.* The objective of the coastal zone management activities is to contribute to balanced and sustainable development of the selected coastal areas by means of cross-sector integration, which would improve livelihood of the local communities through better use of natural and resources.

105. *Participants and Institutional Arrangements.* This activity will be coordinated by a). WWF-Coastal Activities Coordinator (C2-CZC), (Annex 4, Attachment 1) who will have a regional responsibility under Component 2. The LIU in each of the beneficiary countries will include a Local Coastal Zone Manager who will be responsible for day-to-day management of the activities. The coastal zone management activities will focus on practical measures for assisting the local communities to improve local environmental management capacity. The existing MLW networks comprise local authorities, local users of natural resources (fishery, farming etc) as well as national experts.

106. The activity includes several small-scale investments for the demonstration and outreach purposes (wetlands, lake restorations, ecotourism activities, small wastewater treatment plants etc). During Phase 1, the technical specifications and drawings for the investments will be developed under the supervision of the C2-CZM and LIU-CZM. The formal approval for funding such investments with GEF funds is delegated to the Project Implementation Team (PIT) in coordination with the LIU Director, on behalf of HELCOM.

107. The BSRP will enter into an agreement with the local cooperating partners to provide the services required for the LIU-CZM responsibilities.

Table 17. Local Cooperating Partners for the ICZM Activities

Country/ICZM Site	Cooperating Partners
Estonia	
Väinameri Area	Matsalu Nature Reserve, The Arhipelaag Research Center, Eesti Looduses Fund
Pärnu Bay/Kihnu	County of Pärnu
Latvia	
Engure/ Ķemeri	Ministry of Environment and Regional Development, Lake Engure Council, Mērsrags community
Lithuania/Kaliningrad Region	
4) Nemunas Delta / Kuršių Lagoon/Kurshskij Zaliv	Ministry of Environment, Lithuanian Fund for Nature, State Committee for Natural Resources of Russian Federation

108. *Geographic Context.* The BSRP aims to assist the coastal communities in five (5)-selected areas coastal areas affected by pollution from agriculture and other sources. In all the selected areas the coastal fishery is important part of the local economy. Table 19 lists the Project sites, the status of the management plans, the corresponding upstream watershed and coastal area.

Table 18. Description of Coastal Zone Demonstration Sites

Countries/Site	Status of Management Plan	Related Watershed Demonstration Area	Area of the Baltic Sea
Estonia			
Väinameri	Management Plan prepared under Haapsalu and Matsalu Bays Environment Project	Matsalu	Matsalu Bay
Kihnu	Management Plan to be prepared under Project	Kabala	Gulf of Pärnu
Latvia			
Engure/Kemeri	Management Plan prepared under HELCOM PITF MLF Phases IA and IB	Bērze	Gulf of Riga
Lithuania and Kaliningrad Region			
Nemunas Delta/Kursiu Lagoon/Kurshskij Zaliv	Management Plan prepared under Klaipėda Environment Project	Šilute	Kursiu Lagoon/Kurshskij Zaliv
	Management Plan prepared under HELCOM PITF MLW Phase IA and IB	Pobedinskoe	Kursiu Lagoon/Kurshskij Zaliv

Sub-activity 3(a) ICZM Väinameri/Matsalu and Pärnu Bay/Kihnu Island (Sites 1 & 2)

109. *Introduction.* The Väinameri/Matsalu and Pärnu Bay/Kihnu Island area is of main importance as nursery for many Baltic fish species and of importance for seals and migrating birds. The biodiversity in Väinameri and its coastal areas constitutes a natural heritage of international importance. Thousands of waterfowl and waders migrate through the area, nest, rest or molt here. Biodiversity here is closely connected to the historical land-use, especially mowing and grazing that has created semi-natural meadow communities characteristic to the area. Therefore, both the land-use intensification and land abandonment cause problems here, and nature conservation is inseparably connected to resource management. In the Pärnu Bay and the island of Kihnu, tourism is developing and small-scaled wastewater treatment facilities are urgently needed to improve the quality of the local coastal waters. The Väinameri is a coastal area situated in northwest Estonia, and includes 3 different sub areas with islands and coast

surrounding the highly productive shallow waters. Fish stocks and catches are decreasing as the result of high nutrient input through the Kasari River and over fishing. The Pärnu Bay area has conditions similar to those in the Väinameri area. The area faces severe socio-economical problems. Near shore fishing is still important but this sector is threatened due to local pollution and over fishing. In the Pärnu Bay, the BSRP will assist the local communities in building small-scale "low" technology wastewater treatment facilities. In cooperation with Component 1, certain activities to improve the spawning grounds will be supported.

110. During implementation, the BSRP will extensively rely on existing HELCOM-MLW Area Task Team. It includes representatives from WWF, the local authorities as well as NGOs.

Task (1) Construct/Restore 3 Small-Scale Ecological Wastewater Treatment Facilities at the Island of Kihnu and Adjacent Coastal Areas.

(a) Identify sites for small scale wastewater treatment plants, operating on "ecological engineering" principles

(b) Prepare Terms of Reference and technical specifications

Task (2) Restoration of Lake Prästevik-Voormsi and Investments in small scale tourism.

(a) Prepare Terms of Reference and technical specifications for restoring lake Prästevik-Voormsi.

(b) Prepare the lake restoration plan

(c) Evaluate and implement small-scale tourism investments.

Task (3) Model Project and Investments for Maintenance of Semi-Natural Grassland

(a) Prepare maintenance plan for semi-natural grasslands.

(b) Coordinate with the ongoing Estonian semi-natural grassland management program.

Task (4) Capacity Building and Training

(a) Conduct a training program for local authorities on integrated planning and management

(b) Conduct three workshops on sustainable use of natural resources for local authorities in the selected areas.

Task (5) Linkages with Component 1

(a) This task is linked with Component 1, the elaboration of an action plan for coastal fishing and fish habitat restoration in the Pärnu Bay, and the restoration of selected salmon river, tributary to the Pärnu River. The activities in Väinameri/Matsalu and Pärnu Bay/Kihnu island areas are complementary to the Sida/WWF/Estonian financed Väinameri rural development project.

Sub-activity 3(b) ICZM Engure/Kemeri (Site 3)

111. *Introduction*. The Engure/Kemeri area in the southwest part of Gulf of Riga in Latvia is a coastal area with rich natural values and a high tourism potential. The coastal area of Engure-Ķemeri is on the outlet from the Lielupe River in which actions are being taken to reduce non-point source pollution from agriculture. The socio-economic problems in the area are very high due to collapse of many traditional economic sectors and small and poor local municipalities. The Engure- Ķemeri Area Task Team had elaborated the ICZM Plan which benefited from consultations and inputs from a wide range of stakeholders and international experts, and WWF. The goal of this sub-activity is to maintain the biodiversity of the valuable habitats, such as semi-natural meadows, lake ecosystems, forests and dunes, promote the sustainable development of forestry, agriculture, energy and other sectors based on wise use of the natural resources, and integrate various socio-economic, nature protection and administrative sectors. The BSSRP will engage the national and local level governments and will build on the earlier work done by the HELCOM-MLW Area Task Team. The Lake Engure Council and Mērsrags Municipality will be involved in all activities.

Task (1) Establishment of Local Small Business Incubator (LSBI) in Mērsrags and Installation of Office Equipment

(a) Prepare Terms of Reference and technical specifications for the task.

(b) Identify exact location of the small business incubator.

(c) Contract part time manager for the small business incubator

(d) Procure the needed office equipment.

(e) Prepare work plan for activities under the Local Small Business Incubator.

(f) Organize seminars, workshops, and public hearings as outlined in work plan.

Task (2) Linkages with Component 1

This task is linked with the elaboration of an action plan for coastal fishing in the Gulf of Riga and the restoration of the Vitrupe and Pēterupe Rivers (the salmon rivers) under Component 1.

Sub-activity 3(c) Nemunas Delta and Kursiu Lagoon/Kurshskiy Zaliv ICZM Management Plan (Site 4)

112. *Introduction.* The Nemunas River is one of the main polluters of the Baltic Sea and requires cooperative integrated transboundary planning and management. To very large extent, the Nemunas Delta area has been drained and polderized and used for agricultural production. Restoration of former wetland areas in the delta would serve as a demonstration activity for nutrient management.

113. Vast meadows and polder systems dominate the Nemunas River Delta landscape. The Nemunas Delta is a Ramsar Site, which provides habitats for several Red List species.

114. The BSRP will engage the local stakeholders and develop the local capacity for coastal management and invest in improving nutrient retention capacity and spawning grounds. A wide range of local partners has been identified, in the Slavsk (Kaliningrad Oblast of Russian Federation) and Šilutė District (Lithuania). Further, local NGOs will be involved.

115. The activity will take place in the Nemunas Delta and Kuršių Lagoon/Kurshskij Zaliv which is a transboundary area. The main focal point of the activities are the delta of the Nemunas River, however, some activities encompass the entire Eastern shore of the Kuršių Lagoon/Kurshskiy Zaliv between Klaipėda and Polessk.

Task (1) Strengthening Local Stakeholder Involvement

(a) Coordinate with existing local initiatives.

(b) Establish local reference group.

(c) Engage local stakeholders in project implementation.

Task (2) Support for Recreational Facilities

(a) Assessment of existing facilities for visitors.

(b) Identification of possible sites for visitors.

(c) Prepare specifications for construction works.

(d) Posting of boards, and maps for visitors, laying down the cognitive trails.

Task (3) Wetland Restoration / Preparation / Meadow Management

(a) Prepare ToRs and technical specifications for the tasks.

(b) Based on the existing study (Ecotek 99) identify the areas for activities, and agree on most suitable site with local stakeholders.

Task (4) Ensure Protection Status for Flooded Forest on Russian Side

(a) Identify most valuable wet forest areas.

(b) Identify possible hydrological restoration needs.

(c) Decision on needed protection regime.

Task (5) Education Activities, Workshops at Local and National Level using the Visitor Center Facilities

(a) Prepare a list of education activities (seminars, workshops, field studies etc).

(b) Organize 10 education activities for involved stakeholders on both sides of the border.

(c) Evaluate and present a report on outcome of the education activities.

Activity 4. Baltic Sea Regional Agri-Environment Assessment Network (RAN)

116. *Introduction to Activity 4.* Component 2 (C2) is a multi-stakeholder process to reduce non-point source pollution from agriculture in the Baltic Sea region. The activities involve individual farmers, authorities, advisers, researchers and regional institutions. Time-span is considerable between actions in the field and environmental improvements in the ecosystem. Cooperative platforms are needed for bridging the short-term actions of BSRP to the long-term changes needed in management of the Baltic Sea ecosystem. The C2-Regional Assessment Network (RAN) will address the need for dissemination of achievements and outputs and the need for coordinated exchange of experience, data compilation, analysis and assessment. Assessment has been included in the name of the network to stress that RAN will promote the processing, analysis and application of information rather than supporting a passive compilation of experiences and data. In the case of Component 1, dissemination of results and exchange of experience rest with the ICES and HELCOM thematic working groups but in the case of the agriculturally related elements of Component 2, similar regional platforms are not available. The proposed Regional Assessment Network will build on three emerging initiatives: the BAAP Regional Network, the Baltic 21 Virtual Research Institute (VRI) and the Jordforsk Monitoring Presentation Program. The three initiatives are complementary in the sense that they combine practice, science and data compilation. The BSRP will aim to strengthen the initiatives and incrementally coordinate analysis and assessment. The networking activities shall have a transboundary assessment perspective rather than a national/local perspective, and enhance communication between the BSRP and the regional institutions. Data collected under the GEF - supported Rural Environmental Protection Project in Poland will also be used in the RAN process.

117. *Objective and Goal.* The objective is to coordinate field-based data and analysis from activities related to C2 and to prepare regional based assessments and advice to support the improved land and coastal water management.

118. *Participants.* Local and international partners of Component 2 and the international cooperating bodies (HELCOM, ICES and IBSFC) will establish Regional Assessment Teams (RAT). The RAT will be coordinated in a simple networking structure emanating from the comparative advantages of the participating institutions. Overall coordination and integration with BSRP will be secured through C2C and the PIT.

Task (1) Define Critical Issues and Tasks for the C2-Regional Assessment Network (RAN)

(a) Trans-sectoral/international workshops, in coordination with Component 1 activities.

(b) Reporting to C2C and Baltic Sea Steering Group (BSSG).

Task (2) Coordinate Assessment and Advice with Component 1 and International Cooperating Bodies

(a) International workshops and seminars.

(b) Define strategies for action.

(c) Provide recommendations and out-reach activities.

Task (3) Establish a Regional Database for Monitoring and Modeling

(a) The Norwegian Research Institute – Jordforsk has initiated the establishment of a regional database based on data from the Gulf of Riga Project and BAAP. Jordforsk will continue developing this database to cover the whole Baltic Sea Region within the BSRP and will include use of information developed under the Rural Environmental Protection Project in Poland. Data and information used will origin from the monitoring program initiated under the BSRP.

(b) Establish a regional database/catalogue of field- and catchment scale demonstration and monitoring activities.

(c) Establish commonly agreed routines for quality assurance of field measurements and monitoring.

(d) Establish a common framework for reporting of nutrient inputs from agricultural sources to the Baltic Sea, and HELCOM.

C. COMPONENT 3 - INSTITUTIONAL STRENGTHENING AND REGIONAL CAPACITY BUILDING

119. *Component Introduction*. Political will and regional cooperation will be essential to achieve the objectives of the Baltic Sea Regional Project. These objectives are to address land-coastal and open sea issues as an integrated Baltic Sea ecosystem, in order to bring about local and regional socioeconomic improvements. The management tools and methodologies which will be developed from local initiatives and regional activities, are intended to provide decision-makers with the capacity for an ecosystem-based approach to managing the Baltic Sea environment. Component 1 and Component 2 efforts focus on working with the fishing, farming, and coastal communities, as well as with the business and technical institutions, to empower the local political structure to build a foundation to strengthen local capacity. Component 3, by making more effective use of the existing coordinating opportunities afforded by HELCOM, IBSFC, and ICES, will focus on strengthening the regional institutional capacity within and between the nine countries of the Baltic Sea watershed area. The aim is to engage the regional stakeholders, not only to provide knowledge of the issues and the efforts being made to address these issues, but also to facilitate technical, institutional, and political cooperation, taking account of the different mandates which the three implementing bodies have from their governing constituencies. It is the intent of Component 3 to bridge the common interests of managing the Baltic Sea ecosystem. Through the Baltic Sea Steering Group, Component 3 help will facilitate the strengthening of the regional institutional capacity, provide a Project coordinating mechanism for the regional stakeholders, and engage the stakeholders and community in the Project through community awareness efforts.

120. *Component Objectives*. The Project overarching objective is the development and application of ecosystem-based management practices to the land, coastal, and marine environment. The objectives of Component 3 are:

- To facilitate the strengthening of regional institutions through capacity building efforts.
- To enhance the inter-agency coordination activities of HELCOM, IBSFC and ICES, through the Baltic Sea Steering Group.
- To develop and apply a comprehensive ecosystem-based management strategy to the Baltic Sea ecosystem.
- To assess the socio-economic effects of implementing the ecosystem based management strategy for farming, fishing and coastal communities.
- To educate and inform the political constituencies and local stakeholders on the project approach and objectives for ecosystem based management.
- To develop and implement a public information and outreach program on project activities and the ecosystem approach to resource management.

121. *Component Participation.* Component 3 will be supervised by the Baltic Sea Steering Group and implemented through the Project Implementation Team in cooperation with HELCOM, ICES and the IBSFC. The Baltic Sea Steering Group will review and disseminate information and management tools and methodologies developed under the Project.

Activity 1. Regional Capacity Building

Sub-activity 1(a) Regional Coordination

122. *Introduction.* Vital to the Project's success is the strengthened local and regional decision-making and management capacity, to understand and improve social and economic conditions in the eastern Baltic. Through institutional capacity building efforts and participatory meetings to address administrative, financial and technical regional matters as they pertain to the management of the Baltic Sea ecosystem resources, this activity will enable the recipient countries to contribute to the strengthening of local and regional institutions. The anticipated outcome from this component is increased awareness among all stakeholders, concerning the value of the Baltic Sea ecosystem, the development of management tools and the application of ecosystem-based management at the regional, national and local level based on the strategy formulated

Task (1) Facilitate Coordination between HELCOM, IBSFC, and ICES

(a) Assist recipient countries to develop regional ecosystem coordination strategy, meet informally at Project commencement to agree upon the terms for implementation and cooperation, agree to meet regularly and informally during the implementation period, and coordinate the Component 3 tasks meeting schedule.

(b) Meet regularly as outlined in the coordination strategy, to collaborate on technical and political matters and project progress, intended as an informal mechanism for the three international bodies responsible for implementing the project to understand and coordinate their efforts.

Task (2) Engage National, Regional and Intergovernmental Representatives

(a) Meet representatives from the international community, national governments, and the European Commission to provide project information in accordance with the meeting schedule determined in Task 1(a).

Task (3) Engage Stakeholders

(a) Provide project information and meet stakeholders, who currently include GIWA, Project co-financers, representatives of national governments, and other organizations supporting the project.

(b) Strengthen existing regional ecosystem coordination network, by organizing a workshop and participatory meetings.

(c) Prepare and implement an outreach program and training.

Task (4) Conduct Launch Workshop

(a) Organize a launch workshop with Project participants and stakeholders, in accordance with the objectives of Task (1a), which will (i) serve as regional introduction to the stakeholders, and (ii) provide a technical coordinating framework for the various local implementers.

Sub-activity 1(b) Baltic Sea Steering Group

123. *Introduction and Objective.* The BSRP Steering Group (BSSG) will be established to (a) enhance the inter-agency coordination activities of the three implementing bodies (HELCOM, IBSFC and ICES); (b) strengthen the regional ecosystem-based decision-making capacity, and (c) facilitate the establish an ecosystem-based reporting system, linked with existing networks. The Baltic Sea Steering Group participants are identified in Annex 7, Attachment 12, Bylaws for the Baltic Sea Steering Group.

Task (1) Review and Approve Baltic Sea Steering Group Bylaws.

Task (2) Conduct Bi-annual Meetings in accordance with the Steering Group Bylaws.

Task (3) Execute Responsibilities as identified in the Steering Group Bylaws.

Sub-activity 1(c) Regional Public Information and Outreach

124. *Introduction.* It is expected that the public awareness and outreach program will be on a national and local level to target the general public, farming, fishing and coastal communities, environmental organizations, the media and regional and national officials. Annex 6, Terms of Reference for the Public Information Team and Public Awareness and Outreach Program details the anticipated program. The process of defining the audiences and messages should be conducted in cooperation with the project institutions. The findings of the proposed social assessment (see Annex 8, Terms of Reference for the Social Assessment) to be conducted under the project will be an important source of information about the target audiences. The objective of the public awareness and outreach program is to organize and implement a regional ecosystem-based strategy, in cooperation with the locally based public awareness and outreach program, to inform the general public, stakeholders, and government officials on the Project, its progress, and outcome. HELCOM will be responsible for implementing the regional public information and outreach program.

Task (1) Develop a Regional Public Information and Outreach Strategy

(a) To increase the public awareness of the Project, HELCOM's information officer will be responsible for reviewing the Terms of Reference for the Public Awareness and Outreach Program and will coordinate this work Component Coordinators (see Annex 6.

Task (2) Approve Public Awareness and Outreach Program Plan by Baltic Sea Steering Group.

Task (3) Implement the Public Awareness and Outreach Program.

Activity 2. Regional Socio-Economic Assessment

125. *Introduction.* As the use of coastal areas around the margins of the Baltic Sea ecosystem intensifies, the lack of effective management to ensure the sustainability of goods and services naturally produced becomes a critical problem influencing the national economies of coastal nations around the Baltic Sea. These nations are faced with having to develop a coherent framework to guide human activities in coastal areas. A new and coherent methodology for determining what is known of the socioeconomic and governance aspects - the human dimensions

- of the Baltic Sea LME will be initiated, based on adaptations from existing socioeconomic and governance modules from other GEF supported LME projects. In implementing this methodology cooperation will be established with several regional ongoing projects.

126. Special attention will be given to improvements in methods of ecosystem valuation and the use of science-based assessments of changing states of the BSLME to implement management actions leading to (a) recovery of depleted biomass yields, (b) restoration of damaged habitats, and (c) improvement in farming management. Efforts to promote ecosystem-based management occur within different socioeconomic and governance frameworks. These frameworks and their associated dynamics must be understood in the same fashion that the structure and interplay of the elements of the natural ecosystem need to be comprehended. This Activity will apply methodologies for strengthening linkages between science-based ecosystem assessments and socioeconomic and governance considerations based on the activities of the BSRP leading to more sustainable economic benefits than are presently realized from Baltic Sea ecosystem resources.

127. The objectives of this sub-activity are to support the ecosystem management strategy with socio-economic validation of ecosystem goods and services. This will be completed by (a) identifying linkages between biophysical capital and the flow patterns of goods and services generated with Baltic Sea resources, (b) developing and applying a comprehensive approach for the testing and evaluation of ecosystem-based socioeconomic methodologies to improve ecosystem valuations and long-term benefits of Baltic Sea resources for the people of the region, and (c) assessing the interactions between governance mechanisms and resource use and sustainability.

128. Development and application of the socioeconomic modules for the Baltic Sea LME project will be based on a series of workshops, symposia, and conferences convened in partnership with pertinent HELCOM, ICES, and IBSFC working groups and committees. Activity 2 will be supervised by ICES in cooperation with the SLU, and implemented in cooperation with HELCOM and IBSFC in cooperation with Baltic 21 and responsible government officials and marine specialists from the nine countries in the region. The Baltic Sea Steering Group will review and disseminate information on the application of methodologies developed under the project.

Sub-activity 2(a) Improved Methodologies and Management Mechanisms for Assessing Ecosystem Goods and Services

129. *Introduction.* Ecological components of the Baltic Sea LME are viewed as biophysical capital. The various forms of the biophysical capital generate flows of goods and services many of which are directly and indirectly used by humans. Some ecological goods and services are transformed into commodities that are cycled through the economy. As conflict of use and negative environmental consequences of human use become more obvious, collective responses at a variety of levels being to emerge as a governance profile. The "management profile" of the BSLME will be developed with due consideration of the existing arrangements. However, at present, governance mechanisms in place in the Baltic region are not ecosystem-based. Institutional, socio-cultural, and economic factors are of substantial significance in the use and management of the natural environment; they are also "regional specific." In seeking to move toward a governance system that is appropriate for ecosystem-based management, it is necessary to understand how existing institutional and cultural systems operate in the Baltic region with regard to their implications for the natural environment and its resources, and how needed change can best be accomplished given societal structures and norms. Governance mechanisms will be

described with regard to human uses of BSLME resources within the framework of formal and informal arrangements, institutions, and mores that determine how BSLME resources and environments are utilized; how problems and opportunities are evaluated and analyzed; what behaviors are deemed acceptable or forbidden; and what rules and sanctions are applied to affect the pattern of resource and environmental use.

Task (1) Research Principal Uses of Ecosystem Resources

(a) Coordination Center will organize team and international experts to (i) identify the principal uses of ecosystem resources and resource users and their activities, and (ii) identify governance mechanisms influencing the use of LME resources.

Task (2) Conduct 1st Workshop to Assess Level of LME-related Activities

(b) Assess interactions between BSLME-related activities and ecosystem resources, impacts of BSLME-related activities on users, and interactions between governance mechanisms and resource use.

Task (3) Conduct 2nd workshop to Assess Socio-economic Importance of Ecosystem Resources

(a) Assess the ecosystem related activities and economic and socio-cultural value of key uses and ecosystem resources, identify the public's priorities and willingness to make trade offs to protect and restore key natural resources, and assess the cost of options to protect or restore key resources.

(b) Develop recommendations for evaluation of the cost-benefits of protection and restoration options, and identification of financing alternatives for the preferred options for protecting/restoring key ecosystem resources

Task (4) Submit Recommendations to BSSG

D. COMPONENT 4 – PROJECT MANAGEMENT

130. *Introduction.* The proposed Project will introduce ecosystem-based assessment and management of the environment and resources of the Baltic Sea. It will serve as a mechanism for managing the common resources of the Baltic Sea ecosystem through strengthened cooperation between three international bodies—HELCOM, IBSFC, and ICES—and the recipient countries. The recipient countries include the eastern littoral countries of the Baltic Sea drainage basin—Estonia, Latvia, Lithuania, Poland and the Russian Federation. The cooperating parties are complemented by the European Union (EU), Denmark, Finland, Germany, Norway, Sweden, United States, NEFCO, UNDP, World Bank, and WWF. Responsibility for Project management and implementation will rest with HELCOM in coordination with IBSFC and ICES. Though each institution has a distinct operational mandate, their statutes call for cooperation and coordination with other bodies.

131. The institutional arrangements are based on a decentralized approach that combines regional and national level coordination with local level implementation. Primary responsibility for Project administration will rest with HELCOM, which will serve as the executing agency for the Project and will undertake this work in full coordination with IBSFC and ICES. A Project Implementation Team (PIT) will be established. An independent consultant will assist the PIT by supporting procurement and disbursement actions. The current BSRP Core Group,[6] which has supported preparation of the Project, will be replaced by the Baltic Sea Steering Group (BSSG) that will provide broad-based support for the implementation process.

Activity 1. Project Management

Sub-activity 1(a) Project Management

Task (1) Manage and Administer Component Implementation

The following arrangements will be used for management of the components included under the Project and the Terms of Reference for Project management and implementation are detailed in Annex 7, Terms of Reference for Project Management and Implementation:

(a) Component 1 will be implemented under the supervision of ICES, working closely with IBSFC and HELCOM. ICES will contract a Component 1 Coordinator (C1C), who will be responsible for overall management of Component 1 and will supervise the implementation of Project-supported activities. The Assistant Coordinator for Component 1 (AC1) will support the work of the C1C; he or she will operate at the local level and be responsible for day-to-day Project management and implementation. The AC1 will work directly with the Local Project Managers (LPMs), the technical Specialists located at the Coordination Centers and Lead Laboratories. The Coordination Centers will coordinate and supervise implementation of component activities in terms of ecosystem health, productivity and fisheries. The LPMs will be contracted from established institutes in each recipient country that engage in ICES activities. They will be responsible for day-to-day implementation in their respective countries. The PIP/PPP provides TORs for the C1C, AC1, and LPMs.

6 Core Group participants include: HELCOM, IBSFC, ICES, Baltic 21, UNDP, World Bank and WWF.

(b) Component 2 will be implemented under the supervision of HELCOM, in coordination with IBSFC, ICES, and WWF.

(i) *Agricultural Activities.* The Swedish University of Agricultural Sciences (SLU) will manage agricultural activities under this component on behalf of HELCOM. The SLU will contract a Component 2 Coordinator (C2C), who will be responsible for overall management of Component 2 and will work with existing field structures established under the Swedish supported BAAP project and the Bank and GEF supported Rural Environmental Protection Project in Poland. Local Implementation Units (LIUs) will operate in each country, and will be responsible for day-to-day Project management and implementation. The LIUs will advise regional groups and organizations, and will work closely with local counterparts and farmers. The LIUs will be staffed with a unit manager, technical specialists, and agricultural advisors. The PIP/PPP provides TORs for the C2C and the LIUs.

(ii) *Coastal Zone Management Activities*. The coastal zone management activities under Component 2, in cooperation with Component 1, will be managed by the WWF, which will provide a coordinator to work with the Area Task Teams that were established in the demonstration areas during the HELCOM PITF MLW supported planning and management studies. The studies will serve as the basis for the BSRP- CZM activities, which will be coordinated by local governments, community-based organizations and NGOs. The PIP/PPP will provide TORs for the coordinator and local counterparts.

(c) Component 3 will be managed by HELCOM in cooperation with IBSFC and ICES. The work of the BSSG, which will review and disseminate information and management tools developed under the Project, will be an element of this component.

(d) Component 4 will provide support for Project management by HELCOM and the cooperating parties. This includes support for the PIT at HELCOM and the various administrative services required for Project reporting, procurement, disbursement and financial management. It will also encompass support for the independent financial audits required by the Bank. HELCOM will retain the services of a qualified consultant, with significant experience in Bank procedures, to assist with procurement and disbursement actions. The consultant will undertake preparation and review of bid documents for civil works and equipment, and terms of reference for services; facilitate evaluations; and support HELCOM in negotiations.

Task (2) Auditing and Reporting

(a) The Project will comply with the "Guidelines for Financial Reporting and Auditing of Projects Financed by the World Bank."

(b) The Bank together with HELCOM will agree upon reporting requirements for Financial management Reports (FMR). The Project will be consistent with the requirements of the World Bank, including the provisions of the Loan Administration Change Initiative (LACI). HELCOM will report to the Bank and be responsible for ensuring that all GEF funded activities are carried out in compliance with Project design and contracts.

(c) Annual independent audits will be conducted as identified in Annex 9, Terms of Reference for Independent Audits.

Sub-activity 1(b) Social Assessment

Task (1) Social Assessment

(a) The BSRP-Social Assessment (SA) will be performed within the framework of the World Bank policies and guidelines for social analysis and assessments. The BSRP-SA has two broad objectives: 1) first, to generate information about beneficiaries and stakeholders to assess Project design and/or modify Project components or approaches; and 2) to monitor Project implementation and evaluate Project progress, impact, and outcomes within the context of social benefits. The SA work to be conducted during the Project will facilitate further consultations and improve the targeting of interventions or project modifications. All Project supported activities will include specific provisions for public awareness activities for decision makers as well as farming, coastal and fishing communities. The social assessment will evaluate the social impacts from the component activities and outreach program, to provide potential modifications to the Project design as needed. This work will be coordinated by a social scientist from the Bank and will be undertaken by local social scientists in order to transfer skills in social assessment to the cooperating countries. Annex 8 provides the Terms or Reference for the Social Assessment.

IV. PROCUREMENT AND DISBURSEMENT

A. INTRODUCTION

132. The Baltic Sea Regional Project is a stand alone Global Environment Facility (GEF) Project structured as an Adaptable Program Lending (APL) project in order to match GEF resources in a phased approach. Procurement of works and goods financed by the GEF Trust Fund will follow the World Bank's *"Guidelines for Procurement under IBRD Loans and IDA Credits"* dated January 1995, and revised January and August 1996 and September 19, 1997. Procurement of services financed by the GEF Trust Fund will follow the World Bank's *"Guidelines for Selection and Employment of Consultants by World Bank Borrowers"* dated January 1997 and revised September 1997. The World Bank's standard bidding documents and contracts will be used. All procurement will be handled centrally by the Project Implementation Team (PIT) to be established at HELCOM, which is based in Helsinki, Finland. These activities will be supported by the Procurement and Finance consultants of the PIT who will be knowledgeable on World Bank procurement procedures.

133. *Allocation of Proceeds.* The Project will be disbursed over a period of two years. The anticipated starting date is May, 2002 and the completion date is May 2004, During this post-closure period between the last disbursement and project closing date, the Grant agreement would remain effective, including Remedies of the Bank under Article V of the Grant Agreement. In the event that a default shall occur in the performance of any obligation on the part of the Borrower under this Agreement, the Bank can enforce these remedies, which include an obligation by the Recipient to reimburse the full grant amount received from the Bank.

134. *Procurement Plan.* The Procurement Plan (Annex 10, Procurement Plan) identifies procurement for the Project.

B. INSTITUTIONS

135. *Project Management Unit*. Project implementation requires procurement of goods and civil works, and selection and contracting of firms and individuals to carry out consulting and other technical assistance services. The PIT will sponsor training with the support of the Procurement Consultant on Bank procurement guidelines, policies and procedures for Project management staff, which includes the Component Coordinators, Assistant Coordinators, the LIUs, and Coordination Center Directors. The PIT will be responsible, *inter alia,* for:

- The procurement of works, goods and consulting services financed under the project.
- The management of project accounts, including loan withdrawals, disbursements from the Special Account as well as financial accounting, auditing and reporting procedures acceptable to the Bank.
- The monitoring of project implementation and the preparation of quarterly reports to the Bank.
- The close liaison with the line ministries, state committees and local authorities on the implementation of the various project sub-components.

136. *PIT Procurement Consultant*. The PIT Procurement Consultant will have the overall responsibility for all procurement actions undertaken in the GEF-funded Project. The

Procurement Consultant will apply proper business practice and sound procurement principles, to maintain Project integrity and transparency. The PIT Procurement Consultant will be familiar with World Bank rules pertaining to procurement and disbursement practices, and be able to provide training to local managers.

137. *World Bank*. The World Bank will manage US$5.5 million of the GEF grant. The PIT Procurement Consultant will establish a Procurement Plan for the World Bank portion of the Project and will ensure approval of this Plan prior to initiating any procurement actions on the World Bank managed budget. Procurement of works and goods financed by the GEF Trust Fund will be in accordance with the Grant Agreement between HELCOM and the World Bank and will follow the World Bank's *"Guidelines for Procurement under IBRD Loans and IDA Credits"* dated January 1995, and revised January and August 1996 and September 19, 1997. Procurement of services financed by the GEF Trust Fund will follow the World Bank's *"Guidelines for Selection and Employment of Consultants by World Bank Borrowers"* dated January 1997 and revised September 1997.

C. FINANCIAL MANAGEMENT AND MONITORING

138. A special account will be established by HELCOM with an advance made by the World Bank. Following receipt by World Bank/Washington of a "Statement of Expenses" in accordance with World Bank requirements, the World Bank will replenish the account. This is normally done on a monthly basis. It is required that this account be managed in United States dollars. The World Bank will require signature certification by the HELCOM Executive Secretary or a designated deputy on all "Statement of Expenses" and replenishment requests.

139. *Bank Review of Procurement*. Procurement documents for all ICB and NCB contracts, and the first IS, NS and MW contracts (draft bidding documents, evaluation report before contract is signed) will be subject to prior review by the Bank. With respect to each consultants' contract estimated to cost the equivalent of US$ 0.2 million or more, the procedures set forth in paragraphs 1, 2 (other than the third subparagraph of paragraph 2(a)) and 5 of Appendix 1 to the Consultant Guidelines shall apply. With respect to each consultant contract for firms estimated to cost less than US$ 0.2 million but more than US$ 0.1 million each, the procedures set forth in paragraphs 1, 2 (other than the second subparagraph of paragraph 2(a)) and 5 of Appendix 1 to the Consultant Guidelines shall apply. With respect to each contract for the employment of individual consultants estimated to cost the equivalent of $ 0.015 million or more, the qualifications, experience, terms of reference and terms of employment of the consultants shall be furnished to the Bank for its prior review and approval.

D. FINANCIAL REPORTING: SEMI-ANNUAL BUDGET REVISIONS

140. HELCOM shall maintain separate records and ledger accounts in respect of the Bank GEF funds and disbursements there from. Not later than three months after the end of any fiscal year of HELCOM in which Bank GEF funds are expended, HELCOM shall: (i) provide the Bank with a statement of account showing the use of the grant funds; and (ii) provide the Bank with a copy of its externally audited financial statements (see below) for such year, together with the opinion of the external auditor on such statements.

E. ANNUAL INDEPENDENT FINANCIAL AUDIT

141. The GEF implementing agencies require that an internationally recognized auditing company carry out an annual independent audit. The Project has programmed the annual audits

which take place at HELCOM will include audits of the Project for the full duration of the Project period. This will be provided as service from the Finnish government. Resources have been made available, however, if additional audits would be required. The audit will take place every 12 months following Project signature until the Project has been declared closed.

F. GUIDELINES

142. The following guidelines will be applied to perform the procurement services outlined in Annex 7 Attachment 5:

- World Bank Financial Rules and Regulations.
- World Bank Procurement and Consultant Guidelines.

V. MONITORING AND EVALUATION PLAN

143. *Introduction*. The monitoring and evaluation process is an integral element of the Project to provide information on whether the project interventions are successful in achieving Project's objective. The process integrates the measurement and monitoring of both performance and impact indicators. Monitoring, a continuous process, provides the information to assess the progress of the implementation, ensures that progress is maintained according to schedule, and measures the quality and effect of the processes and procedures. The monitoring efforts provide the PIT information needed to analyze the current project situation, and identify solutions to keep the schedule. The evaluation process will determine whether the Project objective, defined in terms of APL phase indicators, is being met. The evaluations will be carried out during implementation, and after completion, to provide a perspective on what effects and impacts have been achieved during Project implementation.

144. *Monitoring and Evaluation Plan.* The Monitoring and Evaluation (M&E) Plan (see Table 20) is adapted from the Project Logical Framework (Annex 11) designed to differentiate the activities in the Adaptable Lending Program. The M&E Plan provides a narrative for Project components and the corresponding output indicators for each phase.

145. *Participants.* The monitoring and evaluation process promotes a collaborative team approach utilizing both conventional and participatory strategies, engaging the range of stakeholders. The evaluator team will primarily consist of (a) the PIT, (b) BSSG, (c) and social assessment team, and (d) stakeholders. Self-assessment using stakeholder workshops and information gathered through the project monitoring system will be evaluated on an annual basis.

146. *Reporting.* As part of the monitoring and evaluation process, the Bank together with HELCOM will agree upon reporting requirements for Financial Management Reports (FMR). In addition to the World Bank financial reporting requirements, a range of progress reports will be prepared by the Project Implementation Team. HELCOM will report to the Bank and be responsible for ensuring that all GEF funded activities are carried out in compliance with Project design and contracts. The Project will comply with the Bank required monitoring and evaluation procedures as required for the Implementation Completion Report. The evaluation will rely on both qualitative and quantitative criteria using Bank guidelines, "Monitoring and Evaluation of Program Impacts." The Implementation Completion Report will provide suggestions on possible improvement of the implementation plan and steps that could be taken to ensure achievement of Project goals in Phases 2 and 3. The Implementation Completion Report will be completed no later than six months after the closure of the Project. To support the review process the following reporting will be required from the PIT, and HELCOM will be responsible for report distribution:

- *Monthly narrative report* (maximum 2 pages). The Monthly Reports will outline the work accomplished in the preceding month and outline the work expected to be completed during the coming month. The report will include comments and recommendations to report on project progress.

- *Semi-annual Project Implementation Progress Report:* This Report covers the intervals between the annual reports and reflects the (a) status of implementation progress, problems encounter, and actions needed, (b) the status of the budget, and (c) the degree of achieving the Project objective as measured by the status of the component output indicators identified in Table 20, the M&E Plan.

- *Annual Progress Reports.* One, unified Annual Report will be comprehensive, a synthesis of the semi-annual reports, and will be prepared to fulfill the reporting requirements for the donors, World Bank (Annual Progress Report), UNDP (Annual Project Report–APR), and the GEF Project Implementation Review (GEF PIR). Attached to the Annual Progress Report will be an updated Work plan for the next APL-phase.

- *Implementation Completion Report*. The Implementation Completion Report will be prepared as required by the World Bank.

Table 20. Monitoring and Evaluation Plan

Component Activities	Phase 1. Introduction of the Ecosystem Approach (2002-2004)
1. Comprehensive and expanded monitoring system is operational and producing quality information	1.1 Establish the institutional framework and coordinate regional institutions conducting monitoring to ensure cost effective and integrated activities are completed in Phase 1 1.2 Coordinate with current HELCOM monitoring programs reviewed and upgraded for increasing monitoring parameters and coordination centers, LIUs, hiring staff and purchasing equipment completed in Phase 1
2. Ecosystem health, carrying capacity of Baltic Sea living resources is assessed based on upgraded and standardized ecosystem information	The format for assessment reports prepared and agreed upon, and distributed to BSSG.
3. Targeted watersheds are monitored to assess non-point source pollution	3.1 Ten farms selected to quantify total annual non-point source pollution inputs and farming practices per monitored watershed are selected
4. Demonstration activities for nutrient retention features/wetland restoration implemented	4.1 selection criteria identified for five demonstration sites 4.2 Wetlands identified using the adopted criteria 4.3 At least in two sites “ecological engineering” wastewater treatment facilities operational
5. Investments made sustainable agricultural interventions	5.1 A farmer outreach program that includes community meetings, workshops, and technical material effectively reaches farmers 5.2 Farm management and investment plans that identify critical interventions to reduce non-point source pollution are prepared 5.3 Environmentally responsible farm management practices for sustainable agriculture are developed and put into practice by ten farmers in each participating country 5.4 Twenty-five Sustainable Farm Field days are conducted
6. Selected coastal zone management activities that increase economic welfare and improve environmental quality at the community level are completed	Components of the coastal zone management plans, including environmental restoration, environmental clean up and small-scale investments implemented in five communities
7. Enhance participating local, national, and regional institutional capacity for effective ecosystem-based management	7.1 Five workshops and participatory meetings organized and attended to address administrative, financial and technical regional matters
8. Project management functions	8.1 Project Management structure