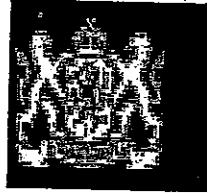Ministry of Environment,
Government of Pakistan

Royal Netherlands Embassy

United Nations
Development Program

Establishment of National Environmental Information Management System

Sub-Program "Policy Coordination and Environmental Governance", NEAP-Support Program

September 2005

1.	Project Title	Establishment of National Environmental Information Management System
2.	Implementing Agency	Ministry of Environment, Government of Pakistan
3.	NEAP-SP Sub-program	Policy Coordination and Environmental Governance
4.	Location/Coverage	All Pakistan
5.	Cost	US $ 2.1 Million
6.	Duration	4 Years
7.	Prepared by	Dr. Murtaza Malik, Program Manager, Policy Coordination, NEAP-SP, Ministry of Environment
8.	Checked by	Mr. Mahboob Elahi, Director General (Env), Ministry of Environment
9.	Approved by	NEAP-SP Steering Committee – Dated 24 July 2004

Executive Summary

The state of environmental data and information in Pakistan remains extremely poor. Consequently, availability and accessibility of accurate environmental information remains a major obstacle to informed decision making in the context of sustainable development.

This Project has been, therefore, designed in line with the provisions of the National Environment Policy, Pakistan Poverty Reduction Strategy Paper and Medium-term Development Framework (2005-10) with the goal of contributing to promotion of sustainable development through building the national capacity in developing, managing and utilizing environmental information for informed decision-making. The purpose of the project is to establish a sustainable network of relevant organizations which are equipped with environmental information technology and tools (databases, GIS, remote sensing and information technology) and are sharing common data infrastructure to facilitate effective management of environment related information in Pakistan.

The main activities to be carried out under the project include:
- Review and analysis of the current status of environmental information management in Pakistan;
- Identification and selection of the minimum data sets, indicators and indices which require monitoring in the context of sustainable development;
- Establishment of an appropriate institutional and technical framework for the National Environmental Information Management System
- Development of databases relating to various sectors of environment (such as water and sanitation, forest, air, land, solid waste, hazardous waste, soil, biodiversity, energy, marine pollution, environmental education etc.) and

inter-sectoral database of existing environmental information in the country and their networking supported by GIS and remote sensing
- Building and strengthening of the capacities of key organizations involved in establishment and operation of NEMIS.

The project will contribute to promotion of sustainable development and alleviation of poverty in Pakistan through enhancing the quality, efficiency and accountability of decision and policy making in the context of sustainable development by providing timely and accurate environmental information. The project will also facilitate state of the environment reporting and reporting on implementation of poverty reduction strategy, multilateral environmental agreements, Millennium Development Goals and the targets set at the World Summit on Sustainable Development.

The project, which will span over a period of four years and cost US$ 2.1 Million, will be implemented by the Ministry of Environment, Government of Pakistan, in collaboration with Provincial Environmental Protection Agencies and other relevant partners.

CONTENTS

LIST OF ABBREVIATIONS

AJK	Azad Jammu and Kashmir
EPA	Environmental Protection Agency
FFC	Federal Flood Commission
GIS	Geographical Information System
GoP	Government of Pakistan
ISS	Information System Specialist
IT	Information Technology
IUCN	World Conservation Union
M & E	Monitoring and Evaluation
NARC	National Agriculture Research Commission
NCS	National Conservation Strategy
NEAP	National Environmental Action Plan
NEAP-SP	National Environmental Action Plan – Support Program
NEIMS	National Environmental Information Management System
NGOs	Non-governmental Organizations
NPM	National Project Manager
RNE	Royal Netherlands Embassy
RS	Remote Sensing
SUPARCO	Space and Upper Atmosphere Research Commission
UNDP	United Nations Development Program
WAPDA	Water and Power Development Authority

1. Background

In Pakistan, environment related data is collected, compiled and published by a host of organizations which, inter-alia, include Federal and Provincial Environmental Protection Agencies, WAPDA, Planning Commission, SUPARCO, Soil Survey of Pakistan, Agricultural Survey of Pakistan, research organizations and NGOs. Federal Bureau of Statistics has also been involved in collection and compilation of available environmental data since 1980. These data are published in the form of "Environmental Statistics of Pakistan". Four versions of this document have been published so far of which "Compendium on Environment Statistics of Pakistan-1998" is the most recent one.

Despite involvement of so many organizations in collection and compilation of environmental data, the state of environmental data and information management in Pakistan remains extremely poor and is characterized by a number of issues:

(i)   The data currently available are insufficient;

(ii)   The data collected are incomplete and agency-, project- or area-specific;

(iii)   Whatever data is available is not easily accessible;

(iv)   Pakistan does not have any officially recognized/notified environmental indicators;

(v)   The available data are not properly organized and difficult to interpret;

(vi)   The available data are of poor quality. They do not meet the minimum acceptable quality standards;

(vii)   There are no data standards with regard to collection, storage and reporting of environmental data and information;

(viii) There is an utter lack of coordination between and amongst various agencies involved in environmental information management; and

(ix)   There is a lack of capacity with regard to environmental information management.

Realizing the poor situation of environmental data and information in the country, Pakistan National Conservation Strategy recommended development of "a range of environmental information systems to increase efficiencies of natural resource use and avoid pitfalls of pollution, resource depletion, and unsustainability". The Strategy also recommended development of "institutional arrangements that support use of these systems at all levels and their application in different types of measures".

Since the implementation of the National Conservation Strategy commenced in 1992, a number of initiatives have been or being taken to improve collection, storage and availability of environmental information in Pakistan. These include Sustainable Development Networking Project, Asian Development Bank funded and Federal Bureau of Statistics' implemented "Institutional Strengthening and Collection of Environmental Statistics Project" and Ministry of Environment's implemented National Land Use Plan Project. Despite these initiatives, the field of environmental

data and information management remains is still in infancy, and availability and accessibility of environmental data and information remains a major obstacle to informed decision making in the country.

Recognizing the need for development of a comprehensive system for developing, managing and utilizing environmental information for informed decision making, the Ministry of Environment has included "Establishment of Environmental Information Management System" as a key component of National Environmental Action Plan Support Programme (NEAP-SP) which is being implemented with the assistance of UNDP and donor agencies to support realization of the National Environmental Action Plan (NEAP), approved by Pakistan's highest policy making forum i.e. Pakistan Environmental Protection Council in 2001. In this context, NEAP-SP, under Component 1.2 of the Sub-program-1 "Policy Coordination and Environmental Governance", seeks to establish an "Environmental Information Management System" so as to facilitate the highest level decision making by providing an objective analysis of the country's environmental situation and its impacts on different sectors of the economy. Under this component, it is envisaged to establish an Environmental Information Management System comprising of: (i) information system; (ii) decision support system; and (iii) coordination and reporting system.

This project has been developed by the Ministry of Environment under the Sub-program "Policy Coordination and Environmental Governance" of NEAP-SP, in line with the recommendations of NEAP as well as other relevant policies and plans of the Government of Pakistan (See Section 3). The project was developed through a consultative process which spanned over a period of more than two years. The first draft of the project was deliberated upon in the meeting of the "Sub-program Implementation Committee" of Sub-program Policy Coordination and Environmental Governance of NEAP-SP, a multi-stakeholder Advisory Committee having representation from the Federal and Provincial Governments, NGOs and the corporate sector, and improved in light of feedback. The revised draft of the project was subsequently circulated amongst the Provincial Governments as well as the Governments of Azad Jammu and Kashmir and Northern Areas and further improved in light of feedback and suggestions.

The final version of the project was reviewed and approved by the NEAP-SP Steering Committee at its meeting held under the chair of the Federal Secretary, Ministry of Environment on 24 July 2005. The members of the NEAP-SP Steering Committee, inter-alia, include Secretaries of Economic Affairs Division, Planning and Development Division, Sciences and Technology, Water and Power, Food and Agriculture; Directors General of the Federal and Provincial Environmental Protection Agencies; and representatives of Provincial Planning and Development Departments and Environmental Donors Coordination Group.

2. Key Elements of the Project

It is envisaged that under the project a network of relevant organizations equipped with environmental information technology and tools (GIS, remote sensing and information technology) and sharing common data infrastructure will be set up to facilitate management of environment related information. In this regard, the Ministry of Environment will act as the "Focal Agency" and house the central databank and will be responsible for overall management of the National Environmental Information Management System (NEIMS). Several nodes, known as NEIMS Sub-Centers or Nodes, will be established in the network to cover various sectors of environment as shown in Figure 1. These agencies, also referred to as Nodal Agencies, will house the sector-specific databanks (e.g. air, water and sanitation, forestry, land, waste, marine, energy) and will be responsible for collection, storage and maintenance of information in one or more areas of environment and transferring the same to Focal Agency as per agreed to format and frequency. The system will also be linked with regional and global environmental information management systems, where appropriate.
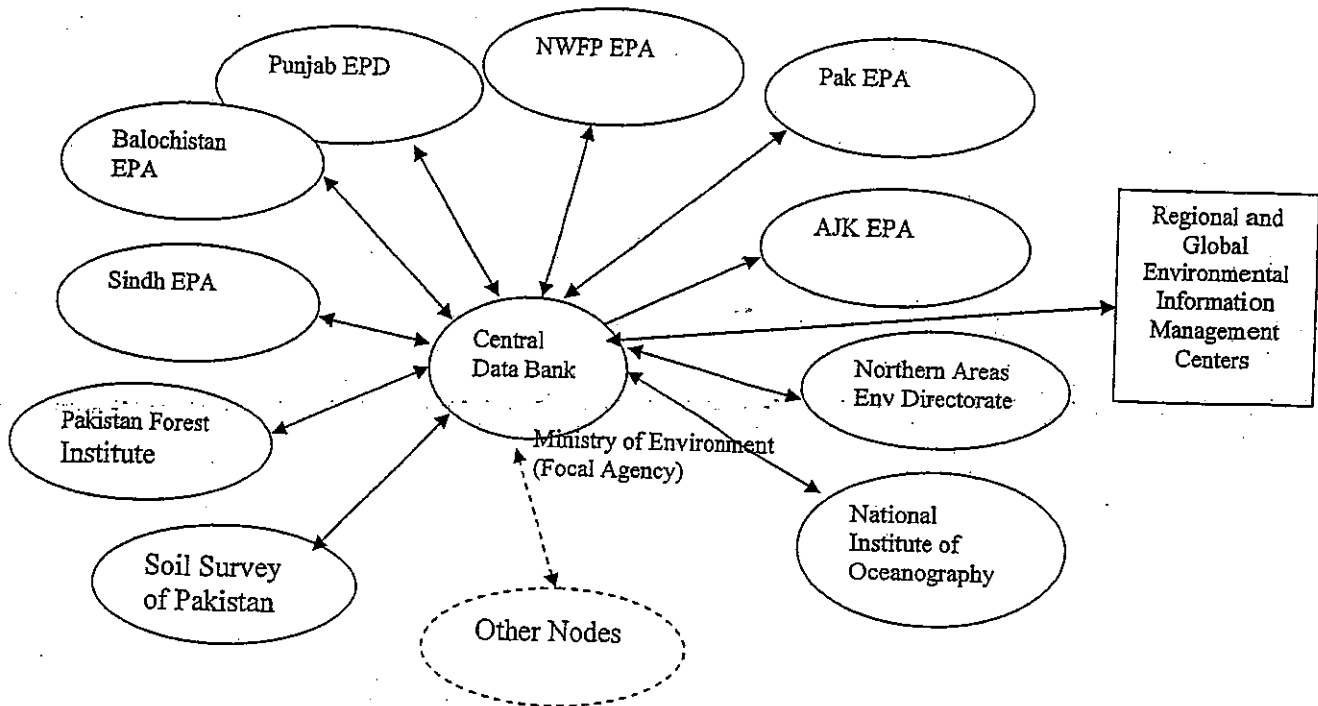
Figure 1: **Proposed Structure of the National Environmental Information Management System**

The key elements of the project include the following:

(i) Review and analysis of the current state of environmental information management in Pakistan;

(ii) Identification and selection of the minimum data sets, indicators and indices which require monitoring in the context of sustainable development in Pakistan;

(iii) Establishment of an appropriate institutional and technical framework for NEIMS Pakistan;

(iv) Development of databases relating to various sectors of environment (such as water and wastewater, forest, air, land, solid waste, hazardous waste, soil, biodiversity, energy, marine pollution, environmental education etc.) and inter-sectoral database of existing environmental information in the country and their networking supported by GIS, remote sensing and decision support system; and

(v) Building and strengthening of the capacities of key organizations involved in establishment and operation of NEMIS.

A water resources specific information management system is proposed to be developed under the auspices of the Federal Flood Commission (FFC), Ministry of Water and Power. The National Environmental Information Management System to be developed under this project will be linked to FFC's information management system and rely on the same for the purposes of water resources specific data/information.

3. Justification of the Project

The project has been designed to address issues relating to availability of timely and accurate environmental information in Pakistan (Section 1) in line with the recommendations of the Pakistan National Conservation Strategy (NCS) which suggests development of a range of environmental information systems.

The project is also in accordance with the Pakistan's Poverty Reduction Strategy Paper which in Chapter 6 (Para 6.32) emphasizes the need for "mapping and establishing a reliable database of environmental resources as well as monitoring to ascertain trends" with a view to "To sharpen the quality of policy formulation and decision making"

The National Environmental Policy of Pakistan, which was approved by the Cabinet of Pakistan in 29 June 2005, also stipulates in Chapter 5.3 that "a national environmental information system shall be established to provide accurate and timely information for informed decision- making as well as to ensure public access to environmental information". Consequently, the Government of Pakistan has

reflected the project as one of the priority projects in the Medium Term Development Framework (2005-10).

The project is also in line with the Agenda 21 which emphasizes the need for regular environmental data and information in Chapter 40 entitled (information for decision making) and in Chapter 8 entitled (integrating environment and development in decision making).

4. Scope and Objectives

4.1. Overall Objective

The overall objective of the project is to contribute to promotion of sustainable development through building the national capacity in developing, managing and utilizing environmental information for informed decision-making.

4.2. Specific Objectives

The specific objectives of the project include:
  - (i) To review and analyze the current situation of environmental data/information management in Pakistan;
  - (ii) To establish an appropriate institutional and technical framework for NEIMS Pakistan;
  - (iii) To develop sectoral and inter-sectoral database of existing environmental information in the country;
  - (iv) To establish functional National Environmental Information System; and
  - (v) To build and strengthen the capacities of key organizations involved in establishment and sustainable operation of NEMIS.

4.3. Expected Results

The project will contribute to promotion of sustainable development and alleviation of poverty in Pakistan through enhancing the quality, efficiency and accountability of decision and policy making in the context of sustainable development by providing timely and accurate environmental information. Other expected results, outcomes and impacts of the project would include the following:
  - (i) Facilitation of national state of environment reporting;
  - (ii) Facilitation of reporting on implementation of poverty reduction strategy; multilateral environmental agreements; Millennium Development Goals and the targets set at the World Summit on Sustainable Development;
  - (iii) Provision of a tool for monitoring and control of environmental impacts, preparation and assessment of regulations, and development and assessment of market instruments;

(iv)   Reduced cost of projects through reduction in time and efforts spent on initial data collection and compilation for project appraisal and formulation;

(v)   Increased environmental awareness and education due to enhanced access to environmental information;

(vi)   Development of environmental information system market in the country and hence creation of employment opportunities; and

(vii)   Promotion of inter-ministerial coordination.

5.   Target Groups

The main groups who will benefit from the project include:

(i)   Key relevant federal ministries and attached departments e.g. Ministries of Environment, Planning and Development, Finance, Health Education, Water and Power, Defence, Trade, Industries, Petroleum and Natural Resources, Science and Technology and Food and Agriculture, Communication; Federal Bureau of Statistics, SUPARCO, Survey of Pakistan, NARC, WAPDA, Soil Survey of Pakistan, Geological Survey of Pakistan;

(ii)   Key provincial line departments and attached organizations e.g. Departments of Environment, Forests; Industries; Planning and Development; Local Government and Rural Development, Irrigation, Wildlife and Fisheries, Local Government and Rural Development, Public Health Engineering and Works and Services;

(iii)   Private Sector;

(iv)   NGOs/Civil Society Organizations;

(v)   Research and Development organizations;

(vi)   Educational institutions;

(vii)   Media;

(viii) Donors and international development partners; and

(ix)   General public.

The project will establish strong linkages with all line departments, key stakeholder organizations and relevant ongoing initiatives, including Sustainable Development Networking Project, Pakistan Water Gateway, National Land Use Plan Project, National Educational Management Information System, National Health Management Information System, National Agriculture Information Management System, Pakistan Wetland GIS-Database, Water Sector Information Management System (WaSIMS) of the National Drainage Program, Federal Flood Commission's proposed Water Resources Information Management System and Government of Pakistan's e-governance Project. Linkages will also be established with regional and global information management systems such as Infoterra and UNEP-GRID system.

6. Activities

The key activities corresponding to each of the specific project objective along with respective outputs/indicators are outlined as follows:

6.1. Objective 1: *To review and analyze the current situation of environmental data/information management in Pakistan*

♣ *Outputs:*
- A comprehensive report on current situation of environmental data/information management in Pakistan.
- Datasets, indicators and indices for monitoring the state of environment are finalized in consultation with the stakeholders.

♣ *Indicators:*
- Report on the current situation of environmental data/information management in Pakistan.
- Number of previous and ongoing initiatives reviewed
- Number of reports reviewed
- Number of meetings held
- Number of stakeholders workshops held
- Number of participants in the stakeholders workshops
- Number of inventories of environmental data and information

♣ *Activities:*
- Review of relevant literature and work carried out under pertinent previous and ongoing initiatives
- Identification of the organization involved in collection and management of environmental data and information
- Identification and inventorization of the type of data/information being collected, managed and supplied by the above organizations
- Identification of the main uses and users of the above data/information
- Analysis of the practices, procedures, processes, tools and resources being used by the organizations for data collection, data/information management and exchange
- Assessment of the availability, accessibility, quality, quantity and relevance of the available data/information and identification of gaps
- Selection of data sets, indicators and indices which will need monitoring in the context of NEIMS
- Preparation of a report on the state of environmental data/information management in Pakistan

6.2. Objective 2: *To establish an appropriate institutional and technical framework for NEIMS Pakistan*

♣ *Output:*

- Institutional and technical framework for NEIMS Pakistan is developed, finalized in consultation with stakeholders and formally notified/adopted/implemented by the Government.

♣ *Indicators:*

- Report on the Institutional and technical framework for NEIMS Pakistan
- Number of NEMIS users identified
- Number of nodes identified
- Data standards and rules developed
- Number of stakeholders workshops held
- Number of participants in the stakeholders workshops

♣ *Activities:*

- Identification of the principal uses and users of NEIMS
- Identification and designation of *Focal Agency* (or national focal point) and nodes (or *Participating Organizations*) for NEIMS and definition/clarification of their roles and responsibilities
- Development of draft institutional and policy framework to facilitate and regulate the collection, integration, harmonization, storage, analysis, presentation and dissemination of data/information for NEIMS
- Development of draft technical framework for NEIMS including applications, data infrastructure, data architecture, data standards and guidelines
- Stakeholders consultations with a view to finalize institutional and technical framework
- Working out details and costs estimates of sector-and inter-sectoral databanks and training and equipment needs, including requirements for hardware, software, databases, maintenance and other information management technologies/tools for establishment and operation of NEIMS
- Notification/adoption/implementation of the technical and institutional framework for NEMIS

6.3. Objective 3: *To develop sector-specific and inter-sectoral database of existing environmental information in the country*

♣ *Output:*

- Sector-specific databases (such as water and sanitation, forest, air, land, solid waste, hazardous waste, soil, biodiversity, energy, marine

pollution, environmental education etc.) are developed and integrated into a centrally coordinated inter-sectoral database and with GIS
- Preparation and publication of environmental atlas of Pakistan

♣ *Indicator:*

- Number of databases developed
- Number of copies of environmental atlas published and disseminated

♣ *Activities:*

- Development of sector-specific databases of the existing environmental information in the country in collaboration with each of the *nodes* in line with the relevant data standards
- Integration of the above databases into a centrally coordinated inter-sectoral database and with GIS to be maintained by the *Focal Agency*
- Preparation and publication of environmental atlas of Pakistan
- Development of specific websites with a view to provide free information to the general public

6.4. Objective 4: *To establish functional National Environmental Information System*

♣ *Output*

- National Environmental Information System along with decision support system is established and made functional
- Audio-visual center and fully equipped mobile center i.e. "Environment on Wheels" is established in Pak EPA for dissemination of environment-related information among general public and in rural areas, respectively.

♣ *Indicators:*

- Functional National Environmental Information Management System/decision support system
- Types and numbers of equipment, software and information tools procured

♣ *Activities:*

- Procurement, installation, commissioning of equipment and information management tools and technologies
- Networking amongst the *Focal Agency* and *Nodes*

6.5. Objective 4: *To build and strengthen the capacities of key organizations involved in establishment and sustainable operation of NEMIS*

♣ *Output:*
- Capacities of key organizations involved in establishment and operation of NEIMS is strengthened

♣ *Indicators:*
- Training need assessment report and training plan
- Number of training courses held
- Number of staff members trained

♣ *Activities:*
- Assessment of the training needs of relevant organizations and design of training plan
- Implementation of the training plan, including on- and of-the-job training

7. Manpower Requirements and Responsibilities

The following project staff will be recruited from market for implementation of the project:
- One National Project Manager
- One Coordinator, Environmental Information System
- Seven Information System Specialists

In order to provide administrative support to the Project Management, the following support staff will also be hired:
- One Database Management Assistant
- One Admin Assistant
- One Finance Assistant
- One Office Secretary
- One Driver
- One Office Boy

The National Project Manager and Environmental Information Management System Coordinator along with the support staff will be based in Islamabad. Seven Information System Specialists will be recruited from the project funds and placed in Pak EPA, Provincial/AJK EPAs and Northern Areas' Environment Directorate.

In addition to the above mentioned officers/staff, the following management/professional staff will also be involved in the project:
- *Director (General), Ministry of Environment:* will act as the National Project Director of the project.
- *Nodal Focal Points:* All EPAs and other Nodal agencies will also designate their full time officers as Focal Points/Coordinators for the

project. Nodal Agencies (other than EPAs) will also depute one of their existing IT staff members to provide technical support in development of the respective databank.

The responsibilities of the team members are as follows:

- *National Project Manager (NPM):* The NPM, under the overall supervision of the National Project Director, will be responsible for the procurement and delivery of project inputs and their conversion into outputs. In this context, the NPM will perform the following specific tasks towards achieving the project objectives:

    (i) Lead and manage the Project Implementation Unit, applying laid down administrative and technical procedures
    (ii) Ensure timely implementation of the project activities
    (iii) Maintain liaison with project partners and stakeholders
    (iv) Prepare work plans, budgets, financial plans and progress reports
    (v) Prepare terms of reference for national and international consultants as well as for sub-contracts and arrange for evaluations of perspective candidates and tender documents
    (vi) Coordinate, manage and monitor implementation of the Project assignments undertaken by the local experts, consultants and sub-contractors
    (vii) Organize stakeholder consultation activities under the Project
    (viii) Organize Project Steering Committee meetings
    (ix) Maintain accurate accounting and financial systems for the Project's resources

The NPM will possess an advanced degree (preferably PhD) in Environmental Engineering, Environmental Sciences or another closely related field and at least 10 years experience in development, management and monitoring of environmental projects.

- *Environmental Information Systems (EIS) Coordinator:* EIS Coordinator will provide technical support and assistance to NPM in achieving the stipulated project outputs. S/He will possess a postgraduate degree in natural sciences, geography, engineering or another closely related field with specialization in GIS and Remote Sensing and over 7 years of experience of relevant experience, especially in data input, storage, analysis and management. S/He will report to the NPM.

- Information System Specialists (ISS): ISS will provide technical support to EPAs and other agencies in the province/region in development and management of databanks/NEIMS Sub-centers. S/He will possess a postgraduate degree in natural sciences, geography, engineering or another

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closely related field with specialization in GIS and Remote Sensing and at least 5 years of experience of relevant experience, especially in data input, storage, analysis and management. S/He will report to the NPM as well as the respective Government/Nodal Agency focal point in the host organization.

A short-term international consultant will be hired on need basis to provide backstopping and advise the project management on technical aspects of the project. Detailed terms of reference of the EIS Coordinator, ISS, support staff and International Consultant will be worked out by the National Project Manager at the time of mobilization of the project.

8. Institutional Setting and Organization

8.1. Organization

The project will be managed and administered by the Environment Wing of the Ministry of Environment, Government of Pakistan, under the umbrella of NEAP-Support Program and in collaboration with the Provincial Environmental Protection Departments/Environmental Protection Agencies and in close coordination with the key stakeholder organizations. For this purpose, a Project Implementation Unit will be established in the Ministry of Environment. The unit would be staffed by the project staff (details given Section 7).

The Ministry of Environment shall designate Director General (Env) as the National Project Director of the project who will lead implementation of the project with the support of the NPM. In addition, all "Nodal Agencies", will also designate their senior officers as Project Focal Points/Environmental Information Coordinators. These Focal Points/Coordinators will coordinate project activities at the provincial level within the respective organizations. They will be assisted in their work by the Environmental Information System Specialists to be recruited under the project.

A high-powered Steering Committee will be established to provide policy guidance, assess progress, and take steps to facilitate effective functioning of the project. The Committee will be chaired by Secretary, Ministry of Environment. Its members would, inter-alia, will include Secretaries of Provincial Environment Departments, Director General, Pak EPA, Inspector General (Forests) and representatives of Planning and Development Division, Federal Bureau of Statistics, Ministry of Science and Technology, E-Government Directorate, Royal Netherlands Embassy, UNDP and other key stakeholders organizations. The Committee will meet every six months.

The institutional structure of the project is illustrated in Figure 2.

8.2. Partners

The main partners of the project and their roles are as follows:

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1. *Ministry of Environment*: Overall execution/implementation of the project in collaboration with the provincial governments/agencies and stakeholders in line with the project document and agreed to procedures.

2. UNDP: The role of UNDP, which is sponsoring implementation of the NEAP-Support Program, will include provision of services, through UNDP Country Office and NEAP-SP Staff, for the following:

    (i)   *Management Oversight*: i.e. project launching; participation in Steering Committee meetings by focal point and senior management of UNDP; monitoring the implementation of the work plan and timetable; trouble shooting; project document revision in consultation with all partners, if required; reviewing, editing, responding to reports; technical backstopping; policy negotiations and operational completion activities.

    (ii) *Financial Management & Accountability:* in line with GoP/UNDP Audit procedures: i.e. conduct of annual audits and submission of reports to RNE and UNDP Headquarters; carrying out budget revisions; preparation of annual progress reports; and arrangements for Tri-partite review and independent final evaluation of the project.
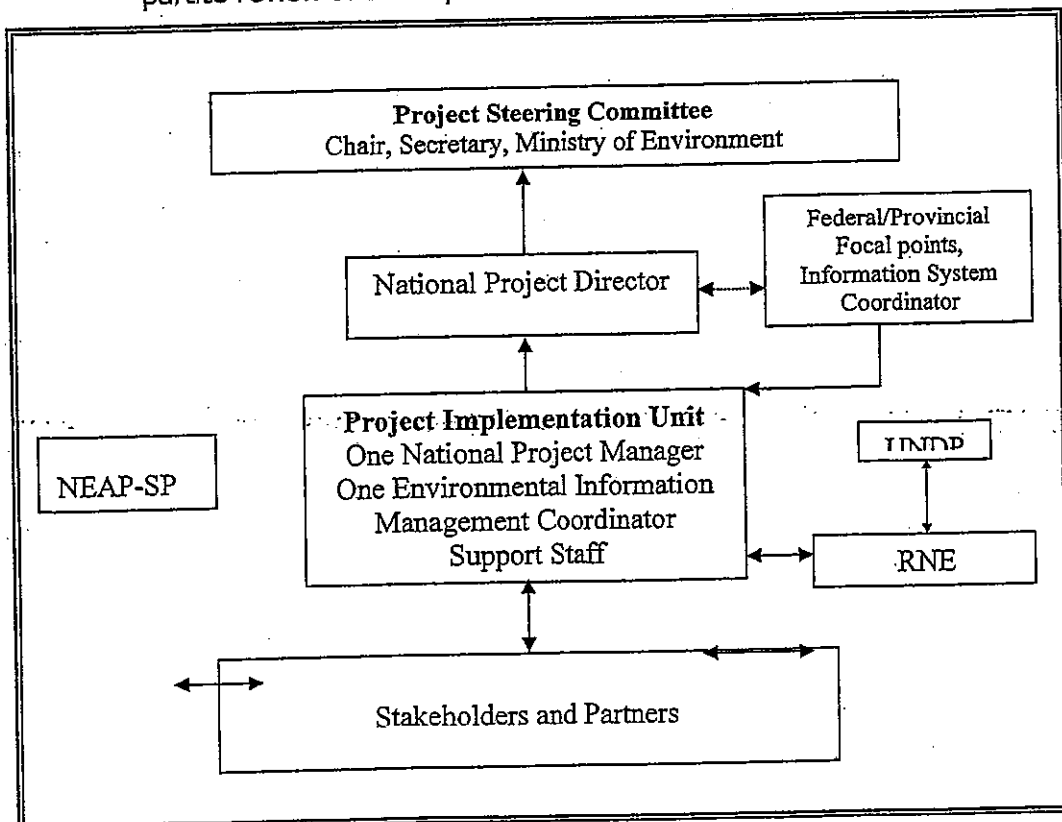

Figure. 2. Institutional Structure of the Project

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3. Royal Netherlands Embassy (RNE): RNE will provide financial assistance for implementation of the project under the umbrella of NEAP-Support Program. RNE will also participate in the meetings of the Project Steering Committee as well as review meetings.

4. Nodal Agencies/Federal and Provincial EPAs: Each of these agencies will designate a full time senior officer as Focal Point/Coordinator for the project. All EPAs will also provide necessary logistics support and office space for the Information System Specialists and establishment of databanks and continue to maintain and sustain the databanks after successful completion of the project. In addition, EPAs and Nodal Agencies will depute one of their existing IT staff members to provide technical support in development of the respective databank. These officers will be trained during the course of project implementation and will subsequently mange the databanks after completion of the project.

In addition to above mentioned partners, target groups listed in Section 5 will be actively involved in the project and play important role in its implementation.

8.3. Internal and External Monitoring

The project log-frame, which also lists the main performance indicators in respect of various outputs planned under the project, is given in Annexure-1. Additional performance indicators would be developed through consultative workshops during the design of the institutional and technical framework for NEIMS (Section 6.2) when various components of NEIMS would be further elaborated.

The project will be monitored and evaluated against the aforementioned performance indicators through the following means:

1. Quarterly and annual progress reports would be prepared and submitted to UNDP and RNE for review. A report on the performance of the project would also be presented to the Project Steering Committee for review and evaluation at each meeting.
2. The performance of the project would be evaluated at the end of each year in the Tripartite Review meeting, according to UNDP policies and procedures. This meeting will be attended by the representatives of the Ministry of Environment, UNDP, Economics Affairs Division and RNE.
3. A mid-term evaluation of the project would be conducted through external consultants
4. A terminal evaluation of the project would be conducted during the last quarter of implementation of the project.
5. A project terminal report would be prepared by the National Project Manager for consideration of Terminal Review Meeting, as per UNDP policies and procedures.

A review of the project after design of the institutional and technical framework for NEIMS would also be done by partners so that any strategic re-adjustments, if needed, can be made with regard to scope and duration of the project.

9. Budget and Financial Plan

The project is envisaged to be implemented over a period of four years. The total project budget for the entire period is US$ 2.1 Million (Table 1 below). Detailed project budget is attached at Annexure-2.

UNDP, which is supporting the Ministry of Environment in implementation of NEAP-SP, will be a partner in the project on cost sharing basis and for this purpose a standard cost sharing agreement will be signed between RNE and UNDP. The 5% UNDP support cost shown in Table 1 would partially cover UNDP's role in execution activities for the project (See Section 5).

Table 1. Consolidated Project Budget

S. No	Expense Head	Amount (US$)				
		Year-01	Year-02	Year-03	Year-04	Total
1	Personnel	166,760	273,560	253,560	253,560	947,440
2	Sub-Contracts	70,000	50,000	100,000	100,000	320,000
3	Training	0	25,000	50,000	25,000	100,000
4.	Equipment, Vehicle and Furniture	95,000	75,000	205,000	95,000	470,000
5	Travel	10,000	10,000	10,000	10,000	40,000
6	Workshops/Consultations	30,000	25,000	15,560	0	70,560
7	Operations	14,000	14,000	17,000	17,000	62,000
8	Monitoring and Evaluation	0	15,000	0	15,000	30,000
9	Contingencies	15,000	15,000	15,000	15,000	60,000
10	SUB-TOTAL	400,760	502,560	666,120	530,560	2,100,000
11	UNDP SUPPORT COST (@5%)					105,000
12	GRAND TOTAL					2,205,000

The Government of Pakistan's in-kind contribution to the project will include services of the National Project Director, Federal/Provincial/Nodal Project Focal Points and Steering Committee members and office space at the Federal and Provincial levels.

Details of costs associated with various project outputs would be further elaborated during the design of technical and institutional framework for the project (Section 6.2) when details and costs estimates for sector-and inter-sectoral databanks and training and equipment needs, including requirements for hardware, software, databases, maintenance and other information management technologies/tools for establishment and operation of NEIMS, will be worked out.

10. Sustainability of the Project

Currently, the Ministry of Environment, EPAs and other relevant agencies, where sector-specific databanks are to be housed, have rudimentary information systems in place. The Ministry of Environment, for instance, has established a "Resource Center" which is equipped with four computers and on-line facilities. The Center is staffed by six professionals who have done some work on data collection. This system is expected to be further strengthened under the e-Government Program of the Government of Pakistan. Similarly, Pak EPA, has set-up a "Green Library" and established a devoted website from which public can access environment related laws, rules, regulations and reports free of cost. Two IT professionals have also been hired to mange the website. Other EPAs and prospective Nodal Agencies have also information technology related infrastructure.

To ensure institutional sustainability, the project will build on the above mentioned initiatives and further strengthen and develop these into proper information management system. As stated in Section 6.2, all relevant organizations will formally notify and adopt the approved technical and institutional framework for NEMIS, which would inter-alia, include establishment of special units called NEIMS Sub-centers/Nodes. Furthermore, IT related staff members of relevant organizations shall be involved in the project from the outset and also provided on- and of-the job training.

To ensure that financial sustainability of project benefits after completion of the external assistance, the following specific measures will be taken:
1. All Information System Specialists, who will be recruited from the project funds, will be absorbed in respective EPAs after successful completion of the project and commissioning of the National Environmental Information Management System. Proposals to this effect will be moved by the respective Environment Protection Departments/Agencies during the beginning of the phase-out period i.e. 1st month of the last year of the project. Provisions to this effect will also be made in the "Restructuring Plans for EPAs" which is currently being prepared.

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2. Considering the fact that the project is based on priorities identified in the relevant National Policies and Plans, adequate provisions for sustainable operation. and maintenance of equipment, technologies, tools and systems and updation of databases will be made in the non-development budgets of all organizations/agencies where databanks will be established. Proposals to this effect will be moved by the Ministry of Environment as well as respective Environment Protection Departments/Agencies and Nodal Agencies during the beginning of the phase-out period i.e. 1st month of the last year of the project.

11. Procedures for Procurement of Goods and Services

Various goods and services under the project would be procured in line with the procedures laid down in the Project Cycle Operations Manual of UNDP. The Manual outlines the agreed Government of Pakistan and UNDP policies, guidelines and procedures of UNDP in Pakistan with a view to ensure implementation of development cooperation activities efficiency, effectively and with full accountability.

12. Risk Analysis

The project has been developed on the basis of the experiences of earlier work carried out in Pakistan with regard to collection, compilation and storage of data and information and similar work undertaken in other parts of the world including "Environmental Information Systems in Sub-Saharan Africa", "Sub-regional Environmental Monitoring and Information Systems in the Greater Mekong Sub-regions Countries", European CORINE Information System and ENVIS in India. Hence, no critical risk has been identified. The significant risks attached with the project, however, include:

* Political factors which can cause some hindrance due to instability in the country.
* There could be structural changes in the design of the project when details and costs estimates for sector-and inter-sectoral databanks and training and equipment needs, including requirements for hardware, software, databases, maintenance and other information management technologies/tools for establishment and operation of NEIMS, will be worked out during the design of technical and institutional framework for the project (Section 6.2).
* Delay in implementation of the project due to frequent transfers of key government officials over a short period of time.
* Delay in implementation due to coordination issues between the national implementing agency and the provinces/nodal agencies/line agencies.

13. Log-Frame

The log-frame of the project is attached as Annexure-1.

14. Work Plan

The project is envisaged to be implemented over a period of four years. The consolidated work plan of the project is attached as Annexure-3. Detailed year-wise and quarterly work plans will be developed by the project management after commencement of the project implementation.

ANNEXURES

Project Title: Establishment of National Environmental Information Management System

Project Log-frame

Project Design		Performance Assessment		Assumptions and its associated risks
Definition	Description	Indicators	Means of Verification	
Goal	To contribute to promotion of sustainable development through building the national capacity in developing, managing and utilizing environmental information for informed decision-making.	■ Accurate and reliable data/information regarding main environmental indicators is timely available and is being used for informed decision making. ■ Environmental data/information is easily accessible to the general public free of cost	■ Relevant government documents such as State of Environment Report, Economic Survey and PRSP showing use of data/information generated by NEIMS. ■ Studies and surveys showing use of NEIMS by relevant Federal and Provincial agencies and stakeholders for decision making. ■ Data acquisition requests made to focal agency/nodal agencies. ■ Devoted website of the National Environmental Information Management System ■ Number of visitors to the website.	■ Current political and economic stability continues to hold in the country ■ Provincial EPAs/nodal agencies retain the staff trained during the project implementation. ■ Provincial EPAs/nodal agencies make adequate provisions in their non-development budgets to sustain NEIMS
Purpose	To establish a sustainable network of relevant organizations which are equipped with environmental information technology and tools (databases, GIS; remote sensing and information technology) and are sharing common data infrastructure to facilitate effective management of environment-related information in Pakistan.	● National Environmental Information Management System (NEIMS) is established and is fully functional.	■ Functional NEIMS comprising of sector-specific and inter-sectoral databases/databanks along with requisite software/hardware. ■ Project Completion Report ■ Independent evaluation at the end of the project.	■ Nodal agencies are fully participating in the project

Expected Outputs	Definition	Description	Indicators	Assumptions and its associated risks
Output - 1	A comprehensive analysis of existing situation of environmental information in Pakistan	Situation Analysis report is finalized and circulated amongst stakeholders	Report on Situation Analysis of Environmental Information in Pakistan.	-
Output – 2	Datasets, indicators and indices for monitoring the state of environment are finalized in consultation with the stakeholders.	Number of data sets, indicators and indices finalized.	▪ Report on environmental datasets, indicators and indices ▪ Stakeholders consultations reports.	-
Output-3	Appropriate institutional and technical framework for NEIMS Pakistan is established.	Institutional and technical framework for NEIMS Pakistan is developed, finalized in consultation with stakeholders and formally notified/adopted/implemented by the Government.	▪ Report on the Institutional and technical framework for NEIMS Pakistan NEIMS design document giving details and costs estimates regarding sector-and inter-sectoral databanks and training and equipment needs, including requirements for hardware, software, databases, maintenance and other information management technologies/tools for establishment and operation of NEIMS ▪ Formal notification regarding adoption of the framework by the Ministry of Environment and relevant government agencies.	Notification(s) regarding adoption of institutional/technical framework is timely issued.
Output-4	Development of databases relating to various sectors of environment (such as water and wastewater, forest, air, land, solid waste, hazardous waste, soil, biodiversity, energy, marine pollution, environmental education etc.) and inter-sectoral database of existing environmental information in the country and their networking supported by GIS and remote sensing.	▪ Sector-specific databases (such as water, forest, air, land, solid waste, hazardous waste, soil, biodiversity, energy, marine pollution, environmental education etc.) are developed and integrated into a centrally coordinated inter-sectoral database and with GIS ▪ Functional National Environmental Information Management System.	▪ Number of databases developed and functional ▪ Number of software developed ▪ Type and number of equipment/technologies/tools procured	▪ Relevant agencies are willing to share their data. ▪ Nodal agencies are willing to establish and maintain/sustain sector-specific databanks
Output-5	Building and strengthening of the capacities of key organizations involved in establishment and operation of NEMIS.	Capacities of key organizations involved in establishment and operation of NEIMS are built/ strengthened.	▪ Type and number of equipment/technologies/tools procured ▪ Training need assessment report ▪ Training Plan ▪ Number of training workshops held ▪ Number of persons trained ▪ Training workshops reports	▪ All the organizations participating in NEIMS spare their staff for training purposes.

Project Title: Establishment of National Environmental Information Management System (NEIMS)
Implementing Agency: Ministry of Environment, Government of Pakistan

Project Budget

EXPENSES HEAD	Year 01 w/m*	Year 01 US$	Year 02 w/m	Year 02 US$	Year 03 w/m	Year 03 US$	Year 04 w/m	Year 04 US$	Total w/m	Total US$
PERSONNEL										
1 x National Project Manager	12	37,200	12	37,200	12	37,200	12	37,200	48	148,800
1 x Environmental Information System Coordinator	12	27,600	12	27,600	12	27,600	12	27,600	48	110,400
7 x Information System Specialists	0	0	84	100,800	84	100,800	84	100,800	252	302,400
1x Database Management Analyst	0	0	12	6,000	12	6,000	12	6,000	36	18,000
1X Admin Assistant	12	6,000	12	6,000	12	6,000	12	6,000	48	24,000
1 x Finance Assistant	12	6,000	12	6,000	12	6,000	12	6,000	48	24,000
1 x Secretary	12	4,800	12	4,800	12	4,800	12	4,800	48	19,200
1 X Driver	12	3,000	12	3,000	12	3,000	12	3,000	48	12,000
1 x Office Boy	12	2,160	12	2,160	12	2,160	12	2,160	48	8,640
1 x International Consultant (on need basis)	4	80,000	4	80,000	3	60,000	3	60,000	14	280,000
Sub-total	88	166,760	184	273,560	183	253,560	183	253,560	638	947,440
SUB-CONTRACTS										
Review and analysis of current situation of environmental information in Pakistan (six-month country-wide study to be undertaken by a team of experts)										
Establishment of technical/institutional framework		50,000		0		0		0		50,000
Development of NEIMS(sector-specific and inter-sectoral databases/decision support system)		20,000		50,000		100,000		100,000		270,000
Sub-total		70,000		50,000		100,000		100,000		320,000
IN-COUNTRY TRAINING										
		0		25,000		50,000		25,000		100,000
Sub-total		0		25,000		50,000		25,000		100,000
EQUIPMENT, VEHICLE AND FURNITURE										
Expendable equipment (stationary and other consumables) for Project Office and EPAs		15,000		15,000		15,000		15,000		60,000
Non-expendable equipment (computers, software, one vehicle, printers, photocopying machines, office equipment and other information system related hardware/software/equipment and tools)		80,000		60,000		190,000		80,000		410,000
Sub-total		95,000		75,000		205,000		95,000		470,000
IN-COUNTRY TRAVEL		10,000		10,000		10,000		10,000		40,000
Sub-total		10,000		10,000		10,000		10,000		40,000
WORKSHOPS/CONSULTATIONS		30,000		25,000		15,560		0		70,560
Sub-total		30,000		25,000		15,560		0		70,560
OPERATIONAL COST										
Communications (tel/fax, postage)		6,000		6,000		6,000		6,000		24,000
Maintenance and operations including PoL		3,000		3,000		6,000		6,000		18,000
Miscellaneous		5,000		5,000		5,000		5,000		20,000
Sub-total		14,000		14,000		17,000		17,000		62,000
MONITORING AND EVALUATION										
Reporting cost				5,000		0		5,000		10,000
Mid-term and final evaluations				10,000		0		10,000		20,000
Sub-total				15,000		0		15,000		30,000
CONTIGENCIES		15,000		15,000		15,000		15,000		60,000
GRAND TOTAL		400,760		502,560		666,120		530,560		2,100,000

Annexure-3

Project Title: Establishment of National Environmental Information Management System

Implementing Agency: Ministry of Environment, Government of Pakistan

Project Work Plan

S.No	Main Activities	Year 01				Year 02				Year 03				Year 04			
		1-Q	2-Q	3-Q	4-Q	1-Q	2-Q	3-Q	4-Q	1-Q	2-Q	3-Q	4-Q	1-Q	2-Q	3-Q	4-Q
1	Staff Recruitment	▮															
2	Constitution of Project Steering Committee	▮															
3	Procurement of equipment	▮															
4	Inception workshop	▮															
5	Situation analysis			▮													
6	Identification/selection of datasets, indicators and indices				▮	▮											
7	Establishment of institutional and technical framework					▮		▮									
8	Development of sector-specific and inter-sectoral databases and establishment of NEIMS								▮	▮							
9	Capacity building of relevant organizations							▮						▮		▮	
10	Evaluations				▮				▮				▮				▮