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| **National Environmental Information Management System**  |
| **Terminal Evaluation of the Project**  |

October 2013

Preface

*This terminal evaluation of “National Environmental Information Management System” Project sets out findings, recommendations and lessons learnt for UNDP.*

*The report is developed in compliance with the Terms of Reference for terminal evaluation. The conclusions and recommendations set out in the report are solely those of the evaluator and are not binding on UNDP.*

*The author would like to thank all those who assisted in the terminal evaluation of NEIMS Project, particularly the UNDP, Project Management Unit of NEIMS, Ministry of Climate Change, Pakistan Environmental Protection Agency, Sindh Environmental Protection Agency, AJ&K Environmental Protection Agency, Environmental Protection Department, Government of Punjab and Environmental Protection Agency Khyber Pukhtunkhwa, SUPARCO and NEC.*

Executive Summary

**Background and Objectives**

The “National Environmental Information Management System” Project is a joint undertaking of the Government of Pakistan (GoP), Government of Netherlands and the United Nations Development Programme (UNDP).

This Project was aimed at developing and implementing a comprehensive approach for the collection, compilation, analysis and reporting of environmental data in a systematic manner. This Project was developed by the Ministry of Climate Change (MoCC) former Ministry of Environment (MoE), 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 GoP.

The goal of the Project was to contribute to promotion of sustainable development through building the national capacity in developing, managing, and utilizing environmental information for informed policy decision making.

The purpose of the Project was to establish a sustainable network of relevant organizations that are equipped with environmental information technology and tools i.e., Data Bases, Geographical Information System (GIS), Remote Sensing (RS) and Information Technology (IT) and are sharing common data infrastructure to facilitate effective management of environment related information in Pakistan.

The MoCC has implemented NEIMS Project with the financial assistance of Embassy of Kingdom of Netherlands (EKN) amounting to US $ 2.205 million and technical and management support of UNDP.

The Project was expected to 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.

This terminal evaluation has been conducted in accordance with UNDP guidance for Project evaluations. The terminal evaluation has been undertaken through a systematic and independent examination of progress (quality & quantity) against the intended targets, realization of Project outputs and outcomes as per Project documents culminating in the shape of findings on the Project design, coordination and implementation.

**Findings**

Overall, the performance of the Project has been evaluated as being “**Moderately Satisfactory”** in achieving its outputs through sensitizing and raising awareness amongst the stakeholders regarding standardized and reliable environmental information/data in Pakistan.

One of the key gaps identified in the Project was "the under-achievements of a few key activities’, due to which NEIMS could not be functional at the end of the Project, in spite of extended duration which spanned over 7.5 years.

For outcome 1 (To review and analyze the current situation of environmental data/information management in Pakistan), the Project has achieved all planned activities albeit in a delayed manner. A review of existing status of environmental data/information in Pakistan has been carried out. The review did act as need assessment for NEIMS Project and assisted in preparation of datasets, indicators and indices for monitoring the state of environment. The establishment of datasets, indicators and indices was one of the key activities of the Project which is the backbone of NEIMS. Based on these achievements, the Component 1 is rated as ‘Moderately Satisfactory’ for its Relevance, Effectiveness and Efficiency. The sustainability rating for Outcome 1 is ‘Moderately likely’.

For outcome 2 (To establish an appropriate institutional and technical framework for NEIMS Pakistan) was designed to have an appropriate institutional and technical framework for NEIMS Pakistan and is duly notified by the Government. The Project developed institutional and technical framework however its notification was not issued by the GoP. The establishment of institutional and technical framework for NEIMS Pakistan was one of the key activities of this component. Therefore, Component 2 is rated as ‘Moderately Satisfactory’ for its Relevance, Effectiveness and Efficiency. The sustainability rating for Outcome 2 is ‘Moderately Unlikely’ due to Institutional Framework and Governance risks involved to make the framework notified by the Government.

For outcome 3 (To develop sectoral and inter-sectoral data bases of existing environmental information in the country), the key activities included development of sectoral and inter-sectoral data bases which were developed. Whereas, one of the key activity i.e., preparation of environmental Atlas of Pakistan was not prepared. Therefore, Component 3 is rated as ‘Moderately Satisfactory’ for its Relevance, Effectiveness and Efficiency. The sustainability rating for Outcome 3 is ‘Likely’.

For outcome 4 (To establish functional National Environmental Information System), was designed to have a functional NEIMS which is being used for informed decision making by the Government and other stakeholders. The Project did establish NEIMS but it was not functional by the end of Project. However, the MoCC is committed to make NEIMS functional which is anticipated soon. As NEIMS is not functional, therefore, component 4 is rated as ‘Moderately Un-satisfactory’ for its Relevance, Effectiveness and Efficiency. The sustainability rating for Outcome 4 is ‘Moderately likely’ due to institutional framework and financial risks to make NEIMS functional.

For outcome 5 (To build and strengthen the capacities of key organizations involved in establishment and sustainable operations of NEIMS), was designed to build organizational capacity within nodal agencies for sustainable operations of NEIMS.Most of the activities under this component were undertaken or will be undertaken when NEIMS is functional. Therefore, Component 5 is rated as ‘Moderately Satisfactory’ for its Relevance, Effectiveness and Efficiency. The sustainability rating for Outcome 5 is ‘Moderately likely’.

Catalytic Role

The utility of Information Management Systems based on GIS/RS/IT technologies is increasing progressively in Pakistan and NEIMS will play a catalytic role in promotion of Information Management Systems in other development sectors.

Monitoring and Evaluation Systems

The Project was subjected to standard UNDP Project monitoring and evaluation procedures. UNDP requirements included progress reporting on quarterly basis and also Annual Project Reports (APR). These annual Project reports did not clearly state whether progress is in line with the agreed time schedule or not.

The achievement of the monitoring and evaluation system of the Project was that all the Project reporting was satisfactory which fairly met the minimum progress reporting standards and time schedule.

There was a provision for a midterm evaluation albeit which was not carried out.

Based on the quality of M&E design and quality of its implementation, the monitoring and evaluation system is rated as MU: ‘Moderately Unsatisfactory’

Assessment of Process Affecting Attainment of Project Results

The Project commenced after a delay of one year primarily due to procedural delays between EKN, UNDP and GOP. Then, there were delays in the recruitment of Project staff with the first National Project Manager hired during January 2007. However, he vacated his post after 8 month because the Project was suspended by the Government of Netherlands. Thereafter, Ministry of Environment was devolved due to 18th amendment to the Constitution of Pakistan which severely affected the progress of the Project.

The overall recruitment of staff, particularly Information System Specialist and other PMU staff, took considerable time. The Information System specialists were out posted at nodal agencies, where some of them left the assignment affecting the performance of their output.

The overall performance of outsourced studies awarded to universities, public sector institutions and nodal agencies varied from good to average.

The suspension of Project and disbandment of MoE has badly affected the overall performance of the Project. It is always difficult to resume the Project activities after suspension because of serious breakage in the momentum of progress.

Key Recommendations

The key recommendations relate to make NEIMS Pakistan functional so that the first State of Environment Report is prepared as follows:

1. **Nomination of Focal Agency for NEIMS Pakistan**: The sustainability of the Project will be ultimately achieved when NEIMS is functional.

According to the Project document, the Ministry of Environment was supposed to act as a focal agency, house the central databank and would be responsible for overall management of the NEIMS. Now, after the devolution; environment is a provincial subject. Therefore, Pak EPA is the most appropriate and natural choice to act as a focal agency for NEIMS Pakistan. Furthermore, Pak EPA is lead agency involved with all the nodal agencies i.e., provincial and regional environmental protection agencies in the field of environment.

It is strongly recommended that Pak EPA should act as a focal agency to manage NEIMS central library.

1. **Establshment of NEIMS Directorate at Pak EPA**: Once, Pak EPA is declared as focal agency then there is a need to establsih NEIMS Directorate. The objective of the Directorat will be to analyses, evaluate and monitor the long term assessment, financing and resouces required to make NEIMS Pakistan functional.

Furthermore, the Directorate will ensure that the conditions, policies and support mechanism are in place for effective and efficient relations in the environment sector, and to provide accurat, reliable, legal and legislative support information for decision making in the country. The Directorate will also coordinate in planning, evaluation, monitoring and management of NEIMS Pakistan at all levels.

The Directorate will be led by a Director; Deputy Director Environment Information Unit having five assistant directors dealing with Natural Resource Management, Wildlife, Pollution Control, Climate Change and Marine; Deputy Director Capacity Building Unit having two assistant directors dealing with Technology Transfer and Demonstration Project.

The estimated cost for establishment of NEIMS Directorate at Pak EPA is Rs 14 million.

1. **Conduct key outstanding activities of NEIMS Project**:

**3.1 Assessment of Indicators:** The study for datasets, indicators and indices under NEIMS Project have identified 92 environmental indicators for Pakistan. In order to establish these indicators, a total of 435 variables have to be measured which is a huge time consuming and costly task.

Pak EPA has notified National Environmental Quality Standards (NEQS) for Pakistan for ambient air, noise, water and wastewater. There is a need that relevant environmental indicators should be linked with NEQS for ambient air, noise, water and wastewater for clarity and unformity.

There is a need that an overall assessment of 92 environmental indicators for Pakistan should be carried out to find out whether any of the indicators has to be dropped or modified or new one has to be added so as to prepare the state of environment report of Pakistan. A final list of environmental indicators for Pakistan should be prepared and notified.

The assessment of indicators should be carried out in a consultative way by involving all the stakeholders.

**3.2 Notification of Institutional and Technical Framework for NEIMS**: There is a huge gap in getting reliable and uniform environmental data in Pakistan. Individual Departments/agencies are using their own standards for environmental monitoring and quantifying impacts.

The institutional and technical framework for a harmonized environmental information/data was identified under the NEIMS Project. However, one of the important outputs was its notification by the Government of Pakistan which has not been done. There is a need that institutional and technical framework should be notified.

**3.3 Environmental Atlas of Pakistan**: The preparation of environmental Atlas of Pakistan was one of the key activities of the NEIMS Project which was not achieved. There is an important link between web based GIS/RS application for environmental monitoring in Pakistan and Environmental Atlas.

Once NEIMS is functional, then environmental Atlas of Pakistan will be updated annually along with the State of Environment Report so as to show the analysis of the current state and trends in the environmental changes. Therefore, there is a strong need to prepare the environmental Atlas of Pakistan.

1. **Functioning of NEIMS Pakistan:** The web based GIS/RS application for environmental monitoring in Pakistan should be made operational.

The focal agency for NEIMS Pakistan will be Pak EPA. The EMIS cells should be established at all the nodal agencies. NEIMS Directorate of Pak EPA should be able make NEIMS Pakistan functional.

1. **Preparation of First State of Environment Report of Pakistan:** The first State of Environment Report should be prepared on the basis of information/data generated by NEIMS Pakistan.

All the recommendations are based on intended outcomes/objectives set for the Project vis-à-vis the actual results as well as the gaps therein.

The need for a functional NEIMS Pakistan is growing and pragmatic actions as recommended would enable to achieve the goal of the Project.

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List of Acronyms

**AJ & K** Azad Jammu and Kashmir

**APR** Annual Project Report

**EKN**  Embassy of Kingdom of Netherlands

**EIA** Environmental Impact Assessment

**EMIS** Environmental Management Information System

**EPA** Environmental Protection Agency

**FBS** Federal Bureau of Statistics

**ISS** Information System Specialist

**GIS** Geographic Information System

**GoP** Government of Pakistan

**NEAP SP** National Environmental Action Plan – Support Programme

**NEIMS** National Environmental Information Management System

**NGOs** Non-Governmental Organizations

**NEC**  National Environmental Consultant

**M&E** Monitoring and Evaluation

**MoCC** Ministry of Climate Change

**MoE** Ministry of Environment

**PEPC**  Pakistan Environmental Protection Council

**PNCS** Pakistan National Conservation Strategy

**RS** Remote Sensing

**SEPA** Sindh Environmental Protection Agency

**SoPs** Standard Operating Procedures

**SUPARCO** Space and Upper Atmosphere Research Commission

**UNDP** United Nations Development Programme

**WAPDA** Water and Power Development Authority

# Introduction

## Background

The Country Programme Action Plan (CPAP) of UNDP for Pakistan, amongst other targets, supports the management of the environment and natural resources.

The CPAP is a part of the UN One Programme in Pakistan, of which one component supports Strengthened and Operational Institutional Mechanisms for Integrated Environmental Management. The NEMIS Project falls under the output “enhancement of the capacity of Pakistan Environmental Protection Council and provincial/regional level apex bodies”.

UNDP tackles environment at two levels, i.e. local level initiatives and secondly efforts for responding to global environmental challenges. UNDP Pakistan's environment Programme supports upstream policy advice at the federal and provincial levels and, keeping in view the devolved nature of development issues, on‐ground activities are carried out through local institutions and communities.

The Project entitled “National Environmental Information Management System (NEIMS)” is one of such initiatives which was completed in May 2013.

UNDP Pakistan intended to undertake an in‐depth terminal evaluation of “National Environmental Information Management System (NEIMS) Project” in line with their Evaluation Policy.

The purpose of this evaluation is to provide impartially derived first-hand information on the achievements of the Project against set targets and its effectiveness, specially pertaining to the overall objective of the Project as stated in the Project document. The findings of the evaluation are to be shared with the members of the Project Board and other stakeholders.

## NEIMS Project

NEIMS Project is a joint undertaking of the Government of Pakistan, Government of Netherlands and the United Nations Development Programme. This Project aims at developing and implementing a comprehensive approach for the collection, compilation, analysis and reporting of environmental data in a systematic manner.

The development of a statistical system of cross cutting sectors such as environment is a long drawn process and the Project has to overcome the deficiencies observed from time to time and develop a comprehensive management information system.

The objective of NEIMS Project was to collect and compile scattered data on environment, leading towards complete, largely automatic, fully integrated ‘state of the art’ solutions for environmental management, planning assessment, compliance, monitoring, control and impact assessment.

The Ministry of Climate Change (MoCC) has implemented NEIMS Project with the financial assistance amounting to US $ 2.205 million provided by Embassy of Kingdom of Netherlands (EKN) and technical and management support of UNDP.

## Purpose of the Evaluation:

The NEIMS Project was scheduled for completion on 31 May 2013. UNDP policy requires an independent terminal evaluation taking place prior to the final Project Board meeting. The evaluation will focus on the delivery of the Project’s results as initially planned.

The evaluation assesses achievement of the Project’s objective, outcomes and outputs and presents ratings for the targeted objective and outcomes. To determine the level of achievement of the Project’s objective and outcomes, the following three criteria have been used in the final evaluation:

* **Relevance**: Were the Project’s outcomes consistent with the focal areas/operational program strategies and country priorities?
* **Effectiveness**: Are the actual Project outcomes commensurate with the original or modified Project objectives?
* **Efficiency**: Was the Project cost effective? Was the Project the least cost option? Was the Project implementation delayed and if it was, then did that affect cost effectiveness?

The main stakeholders of the evaluation include: Ministry of Climate Change, Pakistan Environmental Protection Agency (Pak‐EPA) and Provincial Environmental Protection Agencies, Economic Affairs Division, Planning Commission and other relevant stakeholders. The Terms of Reference of the evaluation is provided in Annexure A.

# Approach and Methodology of the Evaluation

## Approach

The terminal evaluation of NEIMS Project has assessed the extent to which the overall Project’s goal, purpose and expected outputs have been achieved.

## Methodology

This terminal evaluation has been conducted in accordance with established UNDP Project level evaluation procedures “Guidance for conducting terminal evaluation of UNDP supported GEF financed Projects”.

The Results and Resources Frameworkhas formed the basis for the overall Project evaluation; hence, an assessment was undertaken of Project outputs and contribution to Project outcomes. Moreover, the monitoring and evaluation, and financial systems of the Project were reviewed. Recommendations provided are based on the findings from this review.

The terminal evaluation was undertaken through a combination of desk study of the Project and related documents, and consultative meetings held with the relevant stakeholders.

## Desk Review of Project Documentation

A desk review was undertaken of relevant documentation including:

* Project document.
* Documentation produced by the Project such as progress reports, Project steering committee minutes of meeting and training workshop reports etc.
* Studies conducted by the Project such as ‘State of Environment’ Reports, Indicator’s Studies etc.

The complete list of documents reviewed during the evaluation process appears in Annexure-B.

## Planning for consultative meetings with the stakeholders

An open ended questionnaire for semi structured interviews with the stakeholders was prepared to obtain their views about the Project. The list of stakeholders to be interviewed during the evaluation was discussed with the PMU and finalised by the UNDP.

## Interviews with Key Stakeholders

The consultative meetings with the stakeholders were held from 17 to 29 May 2013 in Islamabad, Karachi, Lahore, Peshawar and Muzafarabad to obtain their views on the Project. The list of consultative meetings held with the stakeholders appears in Annexure-C.

A brief record of consultative meetings held with the stakeholders was prepared and shared with UNDP.

## Data Compilation and Analysis

The information obtained through desk review of the Project documents and consultative meetings held with the stakeholders was compiled and tabulated.

A comparison of information obtained with pre-Project scenario, cause–effect linkages and sustainability aspects of the Project was carried out.

## Application of findings

An assessment of efficiency of the Project management, organizational setup, rules and procedures for its functioning, decision-making process, compliance with the decisions adopted for implementation, delivery of inputs in terms of quality, quantity and timeliness was prepared.

Identification and analysis of the major factors that have facilitated or impeded the progress in achieving the intended outputs and their outcomes (planned and unplanned) of the Projects were made.

Analysis of the effectiveness of monitoring and evaluation and the application of adaptive management principles (including effective use of log frame, indicators, UNDP risk management system, and other monitoring tools and mechanisms as appropriate) was made.

Assessments of lessons learned were predicted on the basis of the Project and its results and a set of recommendations were made.

## Dissemination of Evaluation Report

The findings and conclusion of the terminal evaluation were presented by the Evaluator at the Project Steering Committee meeting held on 29th July 2013.

## Limitation of Evaluation

As the NEIMS Project activities were completed on 31st May 2013, some of the Project staff had left at the time of evaluation. This caused difficulties in obtaining information/clarifications required for evaluation of the Project.

## Structure of the Report

This report is intended for the Ministry of Climate Change, Government of Pakistan; UNDP Country Office in Pakistan, and the Embassy of the Kingdom of Netherlands.

The report has been structured into six chapters; Following the Executive Summary, the first chapter describes introduction, second chapter covers methodology adopted for the evaluation, third chapter provides details of the Project, fourth chapter describes findings of the evaluation, fifth chapter describes recommendations and sixth chapter describes lessons learned. A number of annexes provide additional information.

# Project description and development context

## Project start and duration

The originally planned start date of the Project was 1st December 2005 destined for four years with the Project expected to be completed on 30th November 2009.

The Project implementation started on 20th December 2006 and was completed on 31st May 2013 with the actual duration being 7.5years.

There were procedural delays that hindered the start of the Project by one year. Then, the Project was suspended by the Government of Netherland’s decision to suspend aid to Pakistan on account of emergency imposed by the Government of Pakistan on 3rd November 2007. The Project remained suspended from 5th November 2007 up to 22nd August 2008.

## Problems that the Project sought to address

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.

The Federal Bureau of Statistics (FBS) 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 with “Compendium on Environment Statistics of Pakistan-1998” being the most recent one.

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

The data currently available is insufficient for any scientific purpose with many lacunas including but not limited to:

* Pakistan does not have any officially recognized/notified environmental indicators and there are no data standards with regard to collection, storage and reporting of environmental data and information hence data collection is not done in a systematic manner;
* The data collected is incomplete and is agency, Project or area-specific;
* The available data is not easily accessible;
* The available data is not properly organized and difficult to interpret;
* The available data is of poor quality which does not meet the minimum acceptable quality standards;
* There is a lack of coordination between and amongst various agencies involved in environmental information management; and
* There is 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 (PNCS) 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”.

Recognizing the need for development of a comprehensive system for developing, managing and utilizing environmental information for informed decision making, the Ministry of Climate Change (MoCC), former Ministry of Environment (MoE) has included “Establishment of Environmental Information Management System” as a key component of National Environmental Action Plan Support Programme (NEAP-SP). This is being implemented with the assistance of UNDP and donor agencies to support realization of the NEAP, approved by Pakistan’s highest policy making forum i.e. Pakistan Environmental Protection Council in 2001.

The NEAP-SP, under Component 1.2 of the Sub-program-1 “Policy Coordination and Environmental Governance”, seeks to establish an “Environmental Information Management System” in order 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:

* Information System
* Decision Support System
* Coordination and Reporting System

This Project has been developed by the MoCC (former MoE), 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 GoP.

## Immediate and long-term development objectives of the Project

The goal of the Project was to contribute to promotion of sustainable development through building the national capacity in developing, managing, and utilizing environmental information for informed policy decision making.

The purpose of the Project was to establish a sustainable network of relevant organizations that are equipped with environmental information technology and tools (data bases, GIS, remote sensing and information technology) sharing common data infrastructure to facilitate effective management of environment related information in Pakistan. There are five specific objectives of the Project as discussed below:

* **Specific Objective 1:** To review and analyze the current situation of environmental data/information management in Pakistan;
* **Specific Objective 2:** To establish an appropriate institutional and technical framework for NEIMS Pakistan;
* **Specific Objective 3:** To develop sectoral and inter-sectoral database of existing environmental information in the country;
* **Specific Objective 4:** To establish functional National Environmental Information System;
* **Specific Objective 5:** To build and strengthen the capacities of key organizations involved in establishment and sustainable operations of NEIMS.

The objective of an Environmental Information Management System (EIMS) is to provide an inventory (directory) of environmental information resources, employ a web interface for search and retrieval of descriptive information (meta data) and statistics and enable staff and nodal agencies to develop the inventory using web based data forms.

The NEIMS Project plan outlines the required resources to implement an Informational Management System which facilitates the use of environmental data and information at the highest level of decision making. The main activities for NEIMS Project implementation include:

* Analysis of the current state of environmental information management;
* Identification, prioritization and selection of environmental indicators;
* Establishment of organizational and institutional frameworks;
* Implementation of a hybrid of local (agency-specific) and central (NEIMS) Environmental databases and web applications for the system;
* Strengthening of capacities and capabilities of organization involved in NEIMS resources sufficient to support secondary use.

NEIMS would provide models and other analytical tools to transform data into information that is suitable for human interpretation. It would also serve as an archive for reports and studies conducted in the past.

The afore-mentioned functionalities and features of such a system will be implemented by developing multiple databases which store agency-specific environmental information, (ii) linking these individual databases in a network and (iii) providing descriptive information about each individual database and its content through a central library.

Round the clock, controlled user access to this central library and the linked databases would be provided through a web interface (website). Web applications will enable researchers, the general public as well as relevant agencies to access (submit and retrieve) data studies and reports based on their search criteria.

Partner agencies and NEIMS staff would also access the system using the web interface, standard data input forms would enable partner agencies to submit data throughout the day from any location. Furthermore, the NEIMS staff would have administrative control to maintain and expand the overall system. The Environmental Management Information System (EMIS) Cells will be established at all the nodal agencies.

The MoCC (former MoE) will act as a focal agency and manage NEIMS central library. Each partnering/nodal agency will build and maintain agency specific databases and corresponding metadata. Each partnering/nodal agency will also designate a focal person, responsible for coordinating data management efforts with the central agency.

## Baseline Indicators established

No formal baseline indicators were established before, therefore all relevant organizations/agencies kept on using their own standards/indicators serving the purposes of their own work hence a huge gap in data compatibility and sharing.

## Main stakeholders and partners

The Project was managed and administered by the Environment Wing of MoCC (former MoE), Government of Pakistan and in collaboration with the Provincial Environmental Protection Department/Agencies known as “Nodal Agencies” and in close coordination with key stakeholder organizations. The Ministry of Environment had to act as a focal agency and house the central databank responsible for overall management of the NEIMS.

A Project Management Unit (PMU) was established with the Director General (Environment) acting as National Project Director of the Project, who led implementation of the Project with the support of the National Project Manager.

A Project Steering Committee was established to provide policy guidance, assess progress and take required steps to facilitate effective functioning of the Project. The Project Steering Committee was chaired by Secretary, MoCC (former MoE) and its member included secretaries of provincial Environment Departments, Director General, EPAs, Inspector General (Forests) and representative of Planning and Development Division, FBS, Ministry of Science and Technology, E Government Directorate, Royal Netherlands Embassy, UNDP and other key stakeholders.

The MoCC (former MoE), UNDP, Royal Netherlands Embassy and Nodal Agencies (Federal and Provincial EPAs) were the partners of the Project.

## Expected results

The Project was expected to 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:

* Facilitation of national state of environment reporting;
* Facilitation of reporting on implementation of poverty reduction strategy, multilateral environment agreements; Millennium Development Goals and the targets set at the World Summit on Sustainable Development;
* Provision of tool for monitoring and control of environmental impacts, preparation and assessment of regulations, and development and assessment of market instruments;
* Reduced cost of Projects through reduction in time and efforts spent on initial data collection and compilation of Project appraisal and formulations;
* Increased environmental awareness and education due to enhanced access to environmental information;
* Development of environmental information system market in the country and hence creation of employment opportunities; and
* Promotion of inter-ministerial coordination.

# Findings of the evaluation

## Project Design

NEIMS Project has a goal, a purpose, 5 outputs and 23 activities in accordance with the Project log frame. All the indicators set out in the log frame are quantifiable and verifiable.

The log frame of the Project is reasonably good, well laid down and easy to follow. Furthermore, it has clarity on how the outcomes are expected to be achieved. There are strong indicators that help in determining the activities needed in order to achieve outputs and outcomes.

The MoCC was responsible for overall implementation of the Project. UNDP provided management oversight along with financial management and accountability. EKN provided financial assistance for implementation of the Project and participated in the Project steering committee meetings.

The nodal agencies designated their senior officers as Project Focal Points/Environmental Information Coordinators. These Focal Points/Coordinators performed coordinated Project activities at the provincial level within their respective organizations. The Focal Points/Coordinators were assisted by the Information System Specialists (ISS) who were recruited by the Project.

A total of eight Project steering committee meetings were held during the Project implementation period. These meetings were generally effective.

The PMU regularly consulted all the stakeholders and partners during Project implementation on key issues. The response was mixed while all the nodal agencies were unanimous in having uniform environmental data but they were not generating or sharing data/information.

## Results of the Project

The Project was initiated at a time when there was little national level emphasis on standardized and reliable environmental information/data. Conversely, there is now higher degree of awareness regarding environment and greater importance is given to Management Information System for environment at national level.

The Project design is basically quite sound. It is well laid out and in general it is easy to follow. The Project is well-conceived and can be termed a timely initiative.

Pak EPA is likely to take over ownership of NEIMS Project. The NEIMS data and maps will be in the public domain. The web URL has not been announced yet, but it would be made available as soon as it is hosted.

The biggest strength of the Project design is that NEIMS has been designed on the basis of global and regional practices for environmental data which has been blended into Pakistan’s national context for establishment of a sustainable network of relevant organizations which are equipped with environmental information technology and tools (Databases, GIS, RS and IT) to facilitate effective management of environment related information. The Project was designed on the basis of similar interventions worldwide particularly in Uzbekistan.

All the nodal agencies are fully committed to continue with the implementation of NEMIS Pakistan. They have already received necessary hardware and software for the establshment of Environmental Management Information System (EMIS) Cell at their premisis. Once, the EMIS Cells are operational then all the nodal agencies will be linked with each other as well as with the likely focal agency i.e, Pak EPA.

The Project has achieved most of its intended activities however; few key activities were not undertaken. A number of recommendations have been made for sustainability of the project.

The Project initiated the process of facilitation of national state of environment reporting system in Pakistan and promoted inter-ministerial and inter-provincial coordination amongst the stakeholders involved in the field of environment.

The following results of the Project will be achieved when NEIMS Pakistan is functional:

* NEIMS Pakistan will increase environmental awareness and education due to enhanced access to environmental information;
* Facilitation of reporting on implementation of poverty reduction strategy, multilateral environment agreements; Millennium Development Goals and the targets set at the World Summit on Sustainable Development;
* Provision of tools for monitoring and control of environment impacts, preparation and assessment of regulations, development and assessment of market instruments;
* Reduced cost of Projects through reduction in time and efforts spent on initial data collection and compilation of Project appraisal and formulation; and
* Development of environmental information system market in the country hence creation of employment opportunities.

The purpose of the Project was mostly achieved as the process to establish a sustainable network of relevant organizations fully equipped with environmental information technology and tools (Databases, GIS, RS and IT) have been developed.

The sharing of common data infrastructure to facilitate effective management of environment related information in Pakistan will only be achieved when the institutional and technical framework for NEIMS Pakistan is notified by the Government, environmental Atlas of Pakistan is prepared and NEIMS is functional.

Thereafter, the goal of the NEIMS Project will be achieved for promotion of sustainable development through building the national capacity in developing, managing, and utilizing environmental information for informed policy decision making.

## Component wise assessment

### Outcome 1: To review and analyze the current situation of environmental data/information management in Pakistan

Under the outcome 1, proposed activities were to review existing status of environmental data/information in Pakistan for a need assessment of NEIMS Project and to prepare datasets, indicators and indices for monitoring the state of environment. The outputs related to this outcome are as follows:

**Output 1.1:** A comprehensive report on current situation of environmental data/ information management in Pakistan.

**Output 1.2:** Data sets, indicators and indices for monitoring the state of environment are finalised in consultation with the stakeholders.

**Relevance:** All the activities proposed under outcome1 were relevant for analysis of existing situation of availability of environmental information/data in Pakistan which was required for the design of the Project. The Annexure-D provides details of activities undertaken under this component.

Environmental profiles/State of Environment Reports of Sindh, Khyber Pakhtunkhwa, Punjab, Baluchistan, AJ&K and Gilgit-Baltistan were prepared by the Project. However, these profiles were not relevant to the outcome of this component.

The datasets, indicators and indices were designed on the basis of global and regional practices of having environmental data which has been blended into Pakistan’s national context and as such 92 environmental indicators were established.

**Effectiveness:** The Resource Directory of Pakistan provided an inventory of organizations generating primary and secondary environmental data that helped in the selection of environmental indicators for Pakistan.

The Project has produced environmental profiles/State of Environment Reports of Sindh, Khyber Pakhtunkhwa, Punjab, Baluchistan, AJ&K and Gilgit-Baltistan. The quality and presentation of these profiles/State of Environment Reports varied from good to poor. Some of the reports contained irrelevant information or data on a specific Project which was not required or some of the vital information/data was either missing or not provided at all. Furthermore, there were grammatical mistakes with generally poor presentation. Therefore, the effectiveness of these environmental profiles/State of Environment Reports remained limited.

Four workshops were held at Mirpur, Karachi, Peshawar and Lahore for the review and finalization of provincial environmental profiles of AJ&K, Sindh, KPK and Punjab. These workshops created awareness amongst stakeholders about the importance of reliable and standardized environmental data in Pakistan. Furthermore, the outcome of these workshops also provided standard guidelines for the preparation of future provincial environmental profiles and National State of Environment Report of Pakistan.

The data sets, indicators and indices proposed for monitoring the state of environment in Pakistan were prepared on the basis of extensive consultation with the stakeholders. This was a first comprehensive attempt in the country to recognize importance of standardized and reliable environmental information/data and as such, all the stakeholders were taken on board. After finalization of 92 environmental indicators for Pakistan, the consultant has carried out a test run which showed that information/data on these indicators can be achieved.

**Efficiency:** Under Component 1, the Project has undertaken all major planned activities albeit in a delayed manner and within the allocated budget. The Project activities have been undertaken in collaboration with all nodal agencies.

**Box 01: Rating of Outcome 1**

The datasets, indicator and indices for monitoring the state of environment of Pakistan were developed in consultation with all the stakeholders. Therefore, component 1 is rated as MS: **Moderately Satisfactory** for its Relevance, Effectiveness and Efficiency

**Sustainability:** The main output of thisoutcome was to establish data sets, indicators and indices for the NEIMS Project on the basis of international and regional practices. Therefore, the data sets, indicators and indices will likely be used when NEIMS is functional.

**Box 02: Sustainability Rating – Outcome 1**

The sustainability rating for Outcome 1 is **Moderately Likely** due to its wider acceptability.

### Outcome 2: To establish an appropriate institutional and technical framework for NEIMS Pakistan

The Outcome 2 was designed to have an appropriate institutional and technical framework for NEIMS Pakistan which is acceptable to the Government, nodal agencies and other stakeholders. The output related to this outcome is as follows:

**Output 2.1:** Institutional and technical framework for NEIMS Pakistan has been developed, finalized in consultation with stakeholders and formally notified by the Government.

**Relevance:** Activities under outcome 2 were relevant for preparation of an Institutional and technical framework for NEIMS Pakistan. The Annexure-D provides details of activities undertaken under this component.

In order to ensure that this framework is effectively followed by all the stakeholders, the GoP has to officially notify it. The GoP has already notified similar frameworks/standards such as National Environmental Quality Standards for discharge of effluent into public water bodies. However, the Project did not officially notify the framework for NEIMS Pakistan which is important for sustainability of the Project.

**Effectiveness:** Based on the National Environmental Sustainable Indicator Study (NESIS), a hand book has been developed. The handbook contains 92 environmental indicators on each of the following areas:

* Atmosphre: Air pollution and ambient air qulaity/climate change etc.
* Biodiversity: forestry etc
* Energy: Transport etc.
* Environmental economics: Pakistan’s economy etc.
* Human Settlement: Demography/Population etc.
* Land: Land use and degradation/agriculture etc.
* Natural disaster: Flood/Earthquake
* Water: Water resources, use, pollution and quality/Waste generation and treatment.

The hand book was widely circulated amongst all the nodal agencies for their views and comments. The response received was incorporated in the hand book which provides a framework for the future collection of new evironmental data. The hand book also provides the format on which the environmental information/data has to be provided.

The framework will have far reaching impacts on the overall quality and reliability of environmental monitoring and reporting in Pakistan.

**Efficiency:** All activities under the outcome 2 have been undertaken except for notification of institutional and technical framework albeit in a delayed manner and within the allocated budget.

**Box 3: Rating of outcome No 2**

The key activities under this component was to prepare institutional and technical framework for NEIMS Pakistan which were developed. Thereafter, the Project should have officially notified the framework for NEIMS Pakistan which was not done. The establishment of NEIMS institutional and technical framework was one of the key activities. Therefore, the rating for Outcome 2 is MS: **Moderately** **Satisfactory** for Relevance, Effectiveness and Efficiency.

**Sustainability:** The institutional and technical framework for NEIMS will be only sustainable if it is officially notified by the GoP.

Once, the NEIMS framework is notified then there is need of an awareness Programme for its promotion to all the stakeholders and general public.

**Box 4 – Risk Rating of Outcome 2**

The sustainability of this component is rated “**Moderately Unlikely**” due to Institutional Framework and Governance risks.

### Outcome 3: To develop sectoral and inter-sectoral data bases of existing environmental information in the country

The outcome 3 was designed to develop sectoral and inter-sectoral database of existing environmental information in Pakistan. The outputs related to this outcome are as follows:

**Outputs 3.1:** Sector specific databases (such as water and wastewater, 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 with GIS.

**Output 3.2:** Preparation and publication of environmental Atlas of Pakistan.

**Relevance:** All the activities under Outcome 3 were relevant to sector specific databases which were integrated into a centrally coordinated inter-sectoral database with GIS and RS. The Annexure-D provides details of activities undertaken under this component.

SUPARCO developed a web based GIS/RS appliaction for environmental monitoring in Pakistan.

SUPARCO conducted studies for 17 Pakistani cities to capture urbanization and industrialization trends by analyzing the land used by residential units and industries in 2000, 2005 and 2010.

The environmental Atlas of Pakistan was relevant for the NEIMS Project but not prepared by the University of Peshawar.

**Effectiveness:** A test version of the web based GIS/RS application for environmetal monitoring in Pakistan of NEIMS Project was inaugurated at the launch of the National Climate Change Policy on February 26, 2013.

The software developed by SUPARCO, is in the form of interactive data maps of Pakistan, where users can also zoom into different areas of the country for area-specific analysis. The web portal provides users a set of filters to change the display parameters for analysis.

The application can carry out analysis of dominant environmental changes at national level covering parameters such as air, water, forestry, biodiversity, desertification, sea surface temperature and forecasting.

The land use analysis and urban sprawl of 17 cities of Pakistan has been prepared by SUPARCO on the basis of best international practices.

SUPARCO acquired environmental data through a remote sensing satellite. The data has not been verified with on-ground information. On-ground data verification at the national level is an expensive exercise which requires extensive human resources. However, the web based GIS/RS application for environmental monitoring in Pakistan has the ability to incorporate corrections to its datasets based on physical data submitted through research. Furthermore, there is a need that future data entries to NEIMS Pakistan should be checked for consistency and reliability.

SUPARCO acquired, processed and analyzed satellite imagery of years 2000, 2005 and 2010 for forestry, biodiversity, desertification, settlements, rocky areas and water bodies. They have also used other environmental datasets already available with different organizations for many years. Since the data is spread over time, they can help identify patterns of environmental changes. The system also contains information on glaciers, natural disasters and land use.

There is a need that the web based GIS/RS application for environmental monitoring in Pakistan is regularly updated. There are public and private sector organisations like Pakistan Metrological Department, which are regularly monitoring different environmental indicators. There is a need that these institutions be asked to provide regularly their environmental data to NEIMS Pakistan.

**Efficiency:** All activities under this outcome have been undertaken except preparation of environmental Atlas of Pakistan albeit in a delayed manner and within the allocated budget.

**Box 05: Component Rating – Outcome 3**

Thekey activities under this component were establishment of sectoral and inter-sectoral data bases which were developed by the Project. However, one activity of preparation of environmental Atlas of Pakistan was not done. Most of the key activities of this outcome were undertaken by the Project. Therefore, the rating for outcome 3 is MS: **Moderately** **Satisfactory** for Relevance, Effectiveness and Efficiency.

**Sustainability:** The web based GIS/RS application for environmental monitoring in Pakistan has been developed by SUPARCO.

**Box 06: Risk Rating – Outcome 3**

**Risk Rating – Outcome 3:** The sustainability rating for outcome 3 is ‘Likely’.

### Outcome 4: To establish functional National Environmental Information System

This outcome was designed to have a functional NEIMS which is being used by all the stakeholders. The outputs related to this outcome are as follows:

**Output 4.1:** National Environmental Information Management System with decision support system is establihshed and functional.

**Output 4.2**: Audio-visual centre and fully equipped mobile centre i.e., “Environment on wheels” is established in Pak EPA for dissemination of environment related information among general public and in rural areas respectively.

**Relevance:** All the planned activities under outcome 4 were relevant to make NEIMS fully functional. However, the Audio Visual center with fully equipped mobile center could not be established as there were doubts about its viability and no decision could be reached for its procurement. The Annexure-D provides details of activities undertaken under this component.

**Effectiveness:** The hardware and software provided by the Project will enable a functional NEIMS Pakistan.

The hardware and software identified by SUPARCO were procured by the Project. However, one of the most important software, ArcGIS Server 10.1, which was required for hosting of the web based GIS/RS application for environmental monitoring in Pakistan was not procured in time and was only received after completion of the project. Now, the application is ready for deployment and parking space for web hosting has been arranged with COMSATS Data Centre, Islamabad. The MoCC is fully commited to have a functional NEIMS Pakistan.

The hardware and technical equipment provided to nodal agencies will keep EMIS Cells at nodal agencies fully functional.

According to the Project document, the Ministry of Environment was supposed to act as a focal agency, house the central databank and would be responsible for overall management of the NEIMS. Now, after the devolution; environment is a provincial subject. Therefore, Pak EPA is the most appropriate and natural choice to act as a focal agency for NEIMS Pakistan.

**Efficiency:** Under Component 4, the Project has undertaken all major planned activities albeit in a delayed manner and within the allocated budget.

**Box 7: Component Rating – Outcome 4**

**Component Rating – Outcome 4:** The Project has established NEIMS but it is not functional. Therefore, the rating for the Relevance, Effectiveness and Efficiency of this outcome is MU: **Moderately Unsatisfactory.**

**Sustainability:** The expected outcome of the functional NEIMS will be in line with the National Environmental Policy of Pakistan, approved by the Cabinet of Pakistan on 29th June 2005, which stipulated in Chapeter 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 availabbility of timely and accurate environmental information in Pakistan is in line with the recommendations of the the Pakistan National Conservation Startergy which suggests development of a range of environmental information systems and in accordance with the Pakistan’s Poverty Reduction Startergt Paper which in Chapter 6 (Para 6.32) emphasizes the need for “mapping and establishing a reliable data bases of environmental resources as well as monitoring to ascretain trends with a view to sharpen the quality of policy formulation and decision making.

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 Chapeter 8 entitled (Integrating envrironment and development in decision making).

The regaular functioning of NEIMS Pakistan will require operational and maintenance cost at focal and nodal agencies.

**Box: 08 Risk Rating – Outcome 4**

The sustainability of major activities under Outcome 4 is **Moderately likely** due to institutional framework and financial risks to make NEIMS functional.

### Outcome 5: To build and strengthen the capacities of key organizations involved in establishment and sustainable operations of NEIMS

This outcome was designed to build organizational capacity within the nodal agencies for sustainable operations of NEIMS. The output related to this outcome is as follows:

**Output 5.1:** Capacities of key organisations involved in establishment and sustainable operation of NEIMS are strengthened.

**Relevance:** The activities under outcome 5 were relevant to ensure that the capacities of nodal agencies are enhanced so that they are capable to operate NEIMS on sustainable basis. The Annexure-D provides details of activities undertaken under this component.

SUPARCO has developed web based GIS/RS application for environmental monitoring in Pakistan and they are one of the premium agency involved in GIS/RS sector in Pakistan. They have already conducted workshops on the web based GIS/RS application for environmental monitoring in Pakistan.

**Effectiveness:**  The web based GIS/RS application for environmental monitoring is user friendly and has been developed on best industry practices.

The out posting Information System Specialists under the Project at all the nodal agencies have resulted increase in their capacities regarding generation, compilation and entry of environmental data.

Two training courses were organized by SUPARCO to expose the officials from different stakeholders to various tools and methods available for identification, collection, compilation and analysis of environmental data from different sources and integrate them with geospatial data, and its dissemination through NEIMS.

All the nodal agencies have been provided with one Medium End Server, one Server Rack, 3 Desktop Computers, 2 UPS for computers, one Toshiba Multi-function Photocopier and one HP Printer 2055 N as part of their capacity building for the establishment of EMIS Cells.

SUPARCO will conduct training of the nodal agencies staff once the web based GIS/RS application for environmental monitoring in Pakistan is hosted, EMIS Cells are established at nodal agencies and NEMIS is functional.

Pak EPA will act as a focal agency for NEIMS Pakistan and there is a need to strengthen their capacities by establishing NEIMS Directorate.

**Efficiency:** Most of theactivities under this outcome were undertaken albeit in a delayed manner and within the allocated budget.

**Box 09: Component Rating – Outcome 5:**

The nodal agencies were strengthened by the Project. Therefore, the rating for Outcome 5 is MS: **Moderately** **Satisfactory** for Relevance, Effectiveness and Efficiency.

**Sustainability:** The nodal agencies are motivated to have a functional NEIMS.

**Box 10: Risk Rating – Outcome 5**

The sustainability of this component is rated **Moderately Likely.**

## Catalytic Role

The utility of Information Management Systems based on GIS/RS/IT technologies is increasing progressively in Pakistan and functional NEIMS will play a catalytic role in promotion of Information Management Systems in other development sectors.

The MoCC is in a process to establish National Information Management System for water supply and sanitation.

## Assessment of Risks to sustainability of Project outcomes

During the Project design phase, four risks were identified. These risks were identified on the experiences of earlier work carried out in Pakistan with regards to collection, compilation and storage of data and information and similar work undertaken in other parts of the world including “Environmental Information System in Sub-Saharan Africa”, Sub-regional Environmental Monitoring and Information Systems in Greater Mekong Sub-region Countries”, European CORINE Information System and ENVIS in India.

During implementation phase of the Project, nine risks were identified and their mitigation measures were elaborated by the PMU. The **Table 4.1** shows the risks and their mitigation measures considered by the Project.

Table 4.1: **Risks and their mitigation measures considered by the Project**

| **Project Risk**  | **Mitigation Measure/Plan**  | **Status**  |
| --- | --- | --- |
| Political factors which can cause some hindrance due to instability in the country | The mitigation measures were considered during design of the Project  |  |
| There could be structural changes in the design of the Project when details and cost estimates for sector and inter-sectoral databanks and training and equipment needs, including requirement of hardware, software, databases, maintenance and other information management technologies/tool for establishment and operation of NEIMS, will be worked out during design of the technical and institutional framework for the Project.  |
| Delay in implementation of the Project due to frequent transfers of key government officials over short period of time.  |
| Delay in implementation due to coordination issues between the national implementing agency and the provinces/nodal agencies/line agencies.  |
| NEIMS is a knowledge management Project and takes time to mainstream.  | To bring on board as many partners as possible this has yielded positive results. | Low risk  |
| Lack of genuine interest by the stakeholders in the success of the Project. The reason is that the resources of the Project are thinly spread out.  | Financial and other resources have been reasonably devolved for the satisfactory functioning of the Project.  | Medium risk  |
| Project was not based on the preliminary investigations and field studies.  | The deficiencies have been overcome by regular improvements during implementation.  | Low risk  |
| Frequent shifts in the activities of the Project and lack of expertise in the Project for sufficient quality control.  | These difficulties have been resolved by mutual consultation with the collaborators.  | Low risk |
| Absence of proven/familiar technology and a model Project for learning for experience for suitable adaptation to the Project culture and structure.  | A similar Project was implemented by UNDP in Uzbekistan and some lessons learnt in this regard were utilized in NEIMS Project | Low risk |
| Delay in the hiring of Project personnel.  | The period for hiring for vacancies of the Project should be reduced to 45 days from initiation of the process. Other bottlenecks, such as non-availability of the selection committee members need to be overcome by nomination of appropriate level representatives.  | Medium risk  |
| Uncertainty due to administrative and political events.  | There should be appropriate mechanisms to overcome the predicaments due to administrative and political snags.  | Remains open  |
| Weak capacity and priority of the collaborating agencies to deliver Project outputs on schedule.  | Some way out needs to be devised to overcome these difficulties.  | Open  |
| Lack of incentives to motivate the data generating organizations to share data with the Project and other relevant stakeholders.  | Possibility should exist for purchase of data on payment.  | Open |

The financial resources within the PMU and all nodal agencies were well managed. During the meetings with stakeholders, none of them raised any concern regarding non availability of funds for implementation of NEIMS activities.

The Project faced institutional framework and governance risks during its implementation due to the 18th Amendment to the Constitution of Pakistan which led to disbanding of the Ministry of Environment and the Project’s suspension by the Government of Netherlands due to the imposition of Emergency in Pakistan on 3rd November 2007. The Project’s performance was badly affected due both the crises.

Although, the actual duration of the Project was 7.5 years against 4 years but in spite of this, the Project cost did not increase, given the fact that there is high inflation in Pakistan at present.

## Assessment of Process affecting attainment of Project Results

The Project was approved and signed by all stakeholders on 1st December 2005. However, the Project activities started on 20th December 2006. Therefore, the Project started with one year delay mainly due to procedural delays between EKN, UNDP and GoP.

The implementation of the Project started on 20th December 2006. The first National Project Manager was hired during January 2007. However, he vacated his post after eight months as the Project was suspended by the Government of Netherlands. The Project remained suspended for almost eight months.

The Project was being managed by the Ministry of Environment which was disbanded due to 18th Amendment to the Constitution of Pakistan and the Project management was entrusted to MoCC.

The procurement of Arch Gis10 Server took considerable time. Due to delay in the procurement of the server, the web based GIS/RS application for environment monitoring in Pakistan could not be made operational. Therefore, NEIMS was not functional at the end of the Project.

A number of consultancies were awarded to universities, public sector institutions and nodal agencies for preparation of environmental profiles, environmental Atlas of Pakistan, data bases and data sets etc.

While SUPARCO did a good job in preparing web based GIS/RS application for environmental monitoring and land use analysis of 17 cities of Pakistan. Whereas, the University of Peshawar was unable to prepare the environmental Atlas of Pakistan. Therefore, the overall performance of universities, public sector institutions and nodal agencies varied from good to average.

The insitutional and technical capacities of nodal agencies were limited. Most of their staff was mostly involved in their own routine work and devoted limited time to the Project.

The Project web site ([www.neims.org.pk](http://www.neims.org.pk)) was developed but it lacked regular updating and most of the information was either missing or not provided at all.

The overall recruitment of staff, particularly Information System Specialist and other PMU staff, took considerable time. The Information System specialists were out posted at nodal agencies, where some of them left the assignment affecting the performance of their output.

Although, the project was related to environment however there was no environmental scientist or engineer engaged by the project.

The overall Project management of the PMU was generally weak to ensure timely completion of different activties particularly there were delays in timely completion of outsourced consultancy studies.

The PMU did not prepared a realistic exist strategy for the project.

The suspension of Project and disbandment of MoE has badly affected the overall performance of the Project. It is always difficult to resume the Project activities after suspension because of serious breakage in the momentum of progress.

## Financial Assessment

According to the budget calculation of NEIMS Project, an expenditure amounting to US $ 1.799 million was spent against a total commitment of US $ 2.205 million as on 10th September 2013. This shows funds utilisation rate of 82%.

Table 4.2: Budget Calculation of NEIMS Project as of 10.09.2013

|  |  |  |
| --- | --- | --- |
| **Description**  | **Amount in US $** | **Amount in US $**  |
| Total Approved Budget |  2,205,000.00  |  |
| **Total Cost Of Project** |  |  **2,205,000.00**  |
|   |  |   |
| Expenditure in 2006 |  57,010.50  |   |
| Expenditure in 2007 |  106,248.07  |   |
| Expenditure in 2008 |  122,045.00  |   |
| Expenditure in 2009 |  161,269.42  |   |
| Expenditure in 2010  |  275,159.00  |   |
| Expenditure in 2011 |  379,006.07  |   |
| Expenditure in 2012 |  491,194.82  |   |
| Expenditure in 2013 (10-09-13) |  207,531.71  |   |
|   |   |   |
| **Total Expenditure** |   |  **1,799,465**  |
|   |  |   |
| **Remaining Balance** |   |  **405,535**  |

## Assessment of Monitoring and Evaluation System

The Project was subjected to standard UNDP Project monitoring and evaluation procedures. UNDP requirements include progress reporting on quarterly basis and also Annual Project Reports (APR). The APR were presented to Project Steering Committee, documenting progress in implementation, while also stating reasons for delays and any other issues to attain special directives. However, these reports were generally not comprehensive to clearly state whether progress of Project are in line with the agreed time schedule or not.

There was a provision for a midterm evaluation of the project which was not carried out.

The achievement of the monitoring and evaluation system of the Project was that all the Project reporting were produced in time and were fairly meeting the minimum progress reporting standards.

**M&E Rating**:

**Box 11: Monitoring and Evaluation Rating**

The monitoring and evaluation system was largely kept on track with the reporting schedule. Therefore, the M&E system is rated as **MU: Moderately Unsatisfactory.**

# Conclusions and Recommendations

The performance of the Project has been **Moderately Satisfactory**. The key reasons for this ranking are that the Project has already achieved most of its outputs.

The major achievements of the project are (a) A comprehensive report on current situation of environmental data in Pakistan was prepared which provided necessary inputs for NEIMS Project, (b) Data sets, indicators and indices for monitoring the state of environment were finalised, (c) Institutional and technical framework for NEIMS Pakistan was developed, (d) Sector specific databases were developed and integrated into a centrally coordinated inter-sectoral database with GIS and RS, (e) National Environmental Information Management System was establihshed, and (f) the capacities of nodal agencies were strengthened.

The key gaps found in the Project implementation are (a) Institutional and technical framework for NEIMS Pakistan was not notified by the Government, (b) the environmental Atlas of Pakistan was not prepared, and (c) National Environmental Information Management System was not functional.

The establishment of audio-visual centre and fully equipped mobile centre i.e., “Environment on wheels” for dissemination of environment related information among general public and in rural areas was not undertaken due to concern about its viability. The evaluator agrees that this activity can be achived later on when NEIMS Pakistan is functional.

The Project has contributed to capacity building of nodal agencies staff in standardized and reliable environmental information/data. However, in the absence of notification of institutional and technical framework of NEIMS, this advancement made by the Project is likely to be restricted only to nodal agencies.

Recommendations

1. **EMIS Cells to be established at all the nodal agencies:** All the nodal agencies must establish EMIS Cells at their respective places for regular updating of NEIMS Pakistan as such they will need additional staff as well as operational cost. The MoCC/Pak EPA should ensure that all nodal agencies reflect operation and maintenace cost of the EMIS Cells under their non-development budget.
2. **SUPARCO to conduct Training**: SUPARCO has developed web based GIS/RS application for environmental monitoring in Pakistan as well as land use analysis of 17 cities of Pakistan. SUPARCO should conduct trainings of all nodal agencies staff who would be involved in updating of the application and provide them with the SOPs for operating the application.
3. **NEIMS to support Environmental Data Generating organizations**: There is a need that the web based GIS/RS application for environmental monitoring in Pakistan is regularly updated. There are public and private sector organisations like Pakistan Metrological Department, which are regularly monitoring different environmental indicators. There is a need that these institutions be asked to provide regularly their environmental data to NEIMS Pakistan. The MoCC/Pak EPA should sign a formal memorandum of understanding with these organizations so as to formalize their support to NEIMS Pakistan.

Furthermore, the MoCC/Pak EPA should support public and private sector organistions involved in generating continous monitoring environmental data by giving them one time grant or to buy the data from them on annual basis so that they remain motivated to provide data to NEIMS Pakistan regularly.

1. **Check Data Entry to NEIMS Pakistan**: A percentage of data to be entred to NEIMS Pakistan must be checked for consistency and reliability.

# Lessons Learnt

As a result of the Project implementation, there are certain key lessons learnt and need to be kept in mind and considered during planning and implementation similar interventions in future:

1. **Conduct Mid Term Evaluation**: The Mid Term Evaluation is one of the most powerful tools in monitoring and evaluation to gauge the performance of a Project in time. The importance of Mid Term Evaluation becomes significant in case of Projects having longer duration.
2. **Pro-active PMU**: There is a need for strong coordination in the Projects wherein a number of collaberative institutions (Federal and Provincial Departments) are involved. The PMU role should be proactive to facilitate timely implementation of the Project actively as planned.
3. **Improve Quality of Progress Reports**: The Annual Project Reports should mention activity wise progress of the Project which should be compared with the agreed time schedule. Furthermore, there is a need to include an updated logframe of the project so the reader can easily review the performance of the project.
4. **Prepara Project’s Plan for Procurement**: It is pertinent that a proper plan for procurement of goods, services and works should be prepared at the start of the Project with agreed time schedule. The plan should be strictly followed so that all procourement is done well in time.
5. **Assess technical and financial capacities of implementing partners**: There is a need to realistically assess the technical and financial resouces of the partner organisations which are involved in a Project. If there are financial and institutional risks involved then the Project should support the partner organisation in provision of additional manpower as well as payment of operational and maintence costs.
6. **Assess performance of public sector organisations**: The overall performance of public institutions and universties whom were awareded consultancies contracts under the Project was mixed. There is a need that the Project authority should check their capacity as well as resoucres to ensure that they are able to accomplish their tasks in time.
7. **Provid relevant Technical Staff**: The project was related to the field of environment but there was no provision for engagement of relevant technical staff i.e., environmental scientist/Engineer. There is a need that relvant technical staff (subject specialist) should be engaged for efficient implementation of the project.
8. **Prepare a realistic Exist Stratergy**: The is a need to prepare a realist exit startergy which should be in place as soon as project completes.

Annexure-A: Terms of Reference

The terminal evaluation of the National Environmental Management System (NEIMS) should properly examine and assess the perspectives of the various stakeholders. The following areas should be covered in the evaluation report:

**1. General Information about the Evaluation**

The terminal evaluation report should include information on when the evaluation took place; places visited; who was involved; the key questions; and, the methodology. The terminal evaluation report will also include the consultant’s TORs and any response from the Project management team and/or the country focal point regarding the evaluation findings or conclusions as an annex to the report.

**2. Assessment of Project Results**

The evaluation will assess achievement of the Project’s objective, outcomes and outputs and will provide ratings for the targeted objective and outcomes. The assessment of Project results seeks to determine the extent to which the Project objective was achieved, or was expected to be achieved, and assess if the Project has led to any other short term or long term and positive or negative consequences. While assessing the Project’s results, the evaluation will seek to determine the extent of achievement and shortcomings in reaching the Project’s objective as stated in the Project document and also indicate if there were any changes and whether those changes were approved. If the Project did not establish a baseline (initial conditions), the evaluator should seek to estimate the baseline condition so that achievements and results can be properly established.

Assessment of Project outcomes should be a priority. Outcomes are the likely or achieved short‐term and medium‐term effects of an intervention’s outputs. Examples of outcomes could include but are not restricted to stronger institutional capacities, higher public awareness (when leading to changes of behavior), and transformed policy frameworks or markets. An assessment of impact is encouraged when appropriate. The evaluator should assess Project results using indicators and relevant tracking tools.

To determine the level of achievement of the Project’s objective and outcomes, the following three criteria will be assessed in the final evaluation:

* **Relevance**: Were the Project’s outcomes consistent with the focal areas/operational program strategies and country priorities?
* **Effectiveness**: Are the actual Project outcomes commensurate with the original or modified Project objective?
* **Efficiency**: Was the Project cost effective? Was the Project the least cost option? Was the Project implementation delayed and if it was, then did that affect cost effectiveness?

Wherever possible, the evaluator should also compare the costs incurred and the time taken to achieve outcomes with that of other similar Projects.

The evaluation of relevancy, effectiveness and efficiency will be as objective as possible and will include sufficient and convincing empirical evidence. Ideally the Project monitoring system should deliver quantifiable information that can lead to a robust assessment of the Project’s effectiveness and efficiency.

The evaluator will also assess other results of the Project, including positive and negative actual (or anticipated) impacts or emerging long‐term effects of a Project. Given the long term nature of impacts, it might not be possible for the evaluators to identify or fully assess impacts. Evaluators will nonetheless indicate the steps taken to assess long‐term Project impacts, especially impacts on local populations, global environment, replication effects and other local effects. Wherever possible, evaluators should indicate how the findings on impacts will be reported to UNDP and EKN.

**3. Assessment of Risks to Sustainability of Project Outcomes**

The final evaluation will assess the likelihood of sustainability of outcomes at Project termination, and provide a rating for this. Sustainability will be understood as the likelihood of continued benefits after the Project ends. The sustainability assessment will give special attention to analysis of the risks that are likely to affect the persistence of Project outcomes. The sustainability assessment should explain how the risks to Project outcomes will affect continuation of benefits after the Project ends. It will include both exogenous and endogenous risks. The following four dimensions or aspects of risks to sustainability will be addressed:

* **Financial risks**: Are there any financial risks that may jeopardize sustainability of Project outcomes? What is the likelihood of financial and economic resources not being available once the EKN assistance ends (resources can be from multiple sources, such as the public and private sectors, income generating activities, and trends that may indicate that it is likely that in future there will be adequate financial resources for sustaining the Project’s outcomes)?
* **Socio‐political risks:** Are there any social or political risks that may jeopardize sustainability of Project outcomes? What is the risk that the level of stakeholder ownership (including ownership by governments and other key stakeholders) will be insufficient to allow for the Project outcomes/benefits to be sustained? Do the various key stakeholders see that it is in their interest that the Project benefits continue to flow? Is there sufficient public / stakeholder awareness in support of the long term objectives of the Project?
* **Institutional framework and governance risks:** Do the legal frameworks, policies and governance structures and processes within which the Project operates pose risks that may jeopardize sustainability of Project benefits? Are requisite systems for accountability and transparency, and required technical know‐how, in place?
* **Environmental risks:** Are there any environmental risks that may jeopardize sustainability of Project outcomes? The terminal evaluation should assess whether certain activities will pose a threat to the sustainability of the Project outcomes.

**4. Catalytic Role**

The final evaluation will also describe any catalytic or replication effect of the Project. If no effects are identified, the evaluation will describe the catalytic or replication actions that the Project carried out.

**5. Assessment of Monitoring and Evaluation System**

The final evaluation will assess whether the Project met the minimum requirements for Project design of M&E and the implementation of the Project M&E plan. Project managers are expected to use the information generated by the M&E system during Project implementation to adapt and improve the Project. Given the long duration of many UNDP interventions, Projects are also encouraged to include long‐term monitoring provisions to measure mid‐term and long‐term results (such as global environmental effect, replication effects, and other local effects) after Project completion. The terminal evaluation report will include separate assessments of the achievements and shortcomings of the Project M&E plan and of implementation of the M&E plan.

* **M&E design.** Projects should have a sound M&E plan to monitor results and track progress towards achieving Project objectives. An M&E plan should include a baseline (including data, methodology, etc.), SMART (specific, measurable, achievable, realistic and timely) indicators and data analysis systems, and evaluation studies at specific times to assess results and adequate funding for M&E activities. The time frame for various M&E activities and standards for outputs should have been specified.
* **M&E plan implementation.** The terminal evaluation should verify that: an M&E system was in place and facilitated timely tracking of progress towards the Project objective and outcomes by collecting information on chosen indicators continually throughout the Project implementation period; annual Project reports were complete, accurate and with well justified ratings; the information provided by the M&E system was used during the Project to improve performance and to adapt to changing needs; and, the Project had an M&E system in place with proper training for parties responsible for M&E activities to ensure data will continue to be collected and used after Project closure.
* **Budgeting and funding for M&E Activities.** In addition to incorporating information on funding for M&E while assessing M&E design, the evaluator will determine whether M&E was sufficiently budgeted for a the Project planning stage and whether M&E was funded adequately and in a timely manner during implementation.

**6. Assessment of Processes that Affected Attainment of Project Results**

When relevant, the evaluator should consider the following issues affecting Project implementation and attainment of Project results. Note that evaluators are not expected to provide ratings or separate assessments on these issues, but these could be considered in the performance and results sections of the report:

**7. Preparation and readiness**

Were the Project’s objectives and components clear, practicable and feasible within its timeframe? Were the capacities of the executing institution(s) and its counterparts properly considered when the Project was designed? Were lessons from other relevant Projects properly incorporated in the Project design? Were the partnership arrangements properly identified and the roles and responsibilities negotiated prior to Project approval? Were counterpart resources (funding, staff, and facilities), enabling legislation, and adequate Project management arrangements in place at Project entry?

* **Country ownership/drivenness.** Was the Project concept in line with the sectoral and development priorities and plans of the country? Are Project outcomes contributing to national development priorities and plans? Were the relevant country representatives, from government and civil society, involved in the Project? Did the recipient government maintain its financial commitment to the Project? Has the government approved policies or regulatory frameworks that are in line with the Project’s objectives?
* **Stakeholder involvement.** Did the Project involve the relevant stakeholders through information sharing, consultation and by seeking their participation in the Project’s design, implementation, and monitoring and evaluation? For example, did the Project implement appropriate outreach and public awareness? Did the Project consult with and make use of the skills, experience and knowledge of the appropriate government entities, NGOs, community groups, private sector, local governments and academic institutions in the design, implementation and evaluation of Project activities? Were perspectives of those who would be affected by Project decisions, those who could affect the outcomes and those who could contribute information or other resources to the process taken into account while taking decisions? Were the relevant vulnerable groups and powerful supporters and opponents, of the processes properly involved?
* **Financial planning.** Did the Project have the appropriate financial controls, including reporting and planning, that allowed management to make informed decisions regarding the budget and allowed for timely flow of funds? Was there due diligence in the management of funds and financial audits?
* **Delays and Project Outcomes and Sustainability.** If there were delays in Project implementation and completion, what were the reasons? Did the delays affect the Project’s outcomes and/or sustainability, and if so, in what ways and through what causal linkages?

**8. Lessons and Recommendations**

The evaluators will present lessons and recommendations in the terminal evaluation report on all aspects of the Project that they consider relevant. The evaluators will be expected to give special attention to analyzing lessons and proposing recommendations on aspects related to factors that contributed to or hindered: attainment of Project objective, sustainability of Project benefits, innovation, catalytic effect and replication, and Project monitoring and evaluation.

Evaluators should refrain from providing recommendations to improve the Project. Instead they should seek to provide a few well formulated lessons applicable to the type of Project at hand or to GEF’s overall portfolio. Final evaluations should not be undertaken with the motive of appraisal, preparation, or justification, for a follow‐up phase. Wherever possible, the final evaluation report should include examples of good practices for other Projects in a focal area, country or region.

Annexure-B: List of Documents Reviewed

* Khyber Pakhtunkhwa State of Environment, 2011-12, By, Dr. Hussain Ahmad.
* Major Environmental Problems/Issues the supporting to Data Sets/indicators etc. By, National Environmental Information Management System.
* Environmental Data and Information Proposed to be covered under NEIMS By, National Environmental Information Management System.
* Environmental Profile (Draft) Gilgit- Baltistan, by, National Environmental Information Management System Environmental Protection Agency, Gilgit-Baltistan.
* Environmental Profile of Punjab (Part-1)2012, By, Shafqat Niaz Khan Environmental Consultant
* Empirical Based Profile of Proposed Core & Sectroal Environmental Indicators of Pakistan, Working towards an Environmentally-efficient future, Draft Report Task – IV, 2009, By, NEC Consultants Pvt. Ltd.
* National Environmental Sustainable Indicators Stud, Working towards an Environmentally-efficient future, Draft Report Task – I, 2008, By, NEC Consultants Pvt. Ltd.
* National Environmental Sustainable Indicators Stud, Draft Report Task –III, September 2008, By, NEC Consultants Pvt. Ltd.
* National Environmental Sustainable Indicators Stud, Draft Report Task –II, May 2008, By, NEC Consultants Pvt. Ltd.
* AJK State of Environment Report, Main Report Vol-I 2013, By, National Environmental Information Management System.
* National Environmental Information Management System Sindh in Pakistan, By, M. Imran Sabir
* AJK State of Environment Report, Executive Summary, 2013, By, National Environmental Information Management System.
* AJK State of Environment Report, Annexure Vol - II, 2013, By, National Environmental Information Management System.
* National Environmental Sustainable Indicators Study, working towards an Environmentally-efficient future Final Report, November 2008, By, NEC Consultants Pvt. Ltd.
* Annual progress Report of NEIMS Project for the year 2012, January 15, 2013
* Establishment of National Environmental Information Management System (NEIMS) 06 December 2005.
* Minutes of the Second PSC Meeting (NEIMS) 19 February 2003
* Minutes of the sixth PSC-NEMIS Meeting, 28 March 2012, Islamabad
* Fifth Meeting of the PSC of the NEIMS, 3rd January 2011 at Islamabad.
* Fifth Meeting of the PSC of the NEIMS 3rd January 2011 at Islamabad.
* Minutes of the third meeting of the Project steering committee of NEIMS Project, 24 December 2009.
* Training Workshop Report 2-Day Training Workshop, 13-14 May 2011, Karachi
* One Day Workshop to Review and Finalize Environmental Profile of Sindh, 7th March 2013 at Karachi By, Environmental Protection Agency of Sindh in collaboration with National Environmental Management System (NEIMS) Project.
* Annual work plan for the 2012, December 01, 2011 – November 30, 2012
* Sixth month work plan for the year 2013, December 01, 2012 – May 31, 2013
* Annual work Plan, 2007.
* Annual work plan for the year 2008, January –December 2008
* Annual work plan, 2009.
* Annual work plan for the 2010 (Version 4, 10), January 01, 2010 –December 31, 2010
* Annual work plan for the year 2011, January 01, 2011 –November 30, 2011
* One day Workshop to review and Finalize Environmental Profile of Khyber Pakhtunkhwa, 10, April 2013 at Peshawar, By Environmental Protection Agency of KPK in collaboration with National Environmental Management System (NEIMS) Project
* 2-day Workshop to review and Finalize Environmental Profile of Azad Jammu and Kashmir, 14-15th February 2013 at Mirpur, AJK, By Environmental Protection Agency of KPK in collaboration with National Environmental Management System (NEIMS) Project.
* Training Workshop Report, 2-Day Training Workshop 4-5 July 2011 Muzafferabad
* 20.Capacity Building Training Workshop Report, 20-21 June 2011, Lahore

Annexure-C: List of Stakeholders Consulted

| **Time** | **Meeting Person** | **Organizations** |
| --- | --- | --- |
| **Friday, 17-05-2013** |  |
| 14:30-16:00 | Mr. Muhammad Irfan Tariq  | Director General (CC & Env.)/NPD, NEIMS, Ministry of Climate Change |
| 17:00-18:00 | Mr. Jawed Ali Khan | Former DG/NPD-NEIMS, Ministry of Climate Change |
| **Monday, 20-05-2013** |  |
| 10:00-14:00 | Mr. Inam ullah Khan Dharejo | Secretary, Environment and Alternate Energy, EPA – Sindh |
| Mr.M. Imran Sabir | EIA Expert. EPA – Sindh |
| Mr. Shoaib Karim Memon  | ISS, NEIMS, EPA – Sindh |
| **Tuesday, 21-05-2013** |  |
| 9:30-13:00  | Mr. Rehmat ullah Jilani,  | Director, SUPARCO, Karachi  |
| Mr. Javed Ali Qureshi, Mr. Said Rehman | Deputy Chief Manager (DCM), SUPARCO, Karachi |
| Mr. Muhammad Manshah  | Acting Divisional Head, SUPARCO-Karachi |
| **Wednesday, 22-05-2013** |  |
| 12:00-13:00 | Mr. Azhar-ud-din  | Managing Director, NEC, Lahore |
| 14:00-16:00 | Ms. Arifa Lodhi | General Manager, SUPARCO-Lahore |
| **Thursday, 23-05-2013** |  |
| 10:00- 13:00 | Mr. Farooq Hameed Sheikh | Director General, EPA- Lahore |
| Mr. M. Tahir  | Deputy Director (TT), EPA- Lahore |
| **Friday, 24-05-2013** |  |
| 10:00- 12:00 | Dr. Muhammad Bashir Khan | Director General, EPA-KP |
| Dr. Hussain Ahmad | Director, EPA-KP |
| 14:30- 16:30 | Dr. Amjad Ali | Director, EPA-KP |
| Mr. Asif Mehmood | EIA Expert |
| **Monday, 27-05-2013** |  |
| 10:00-15:00 | Ch. Abdul Qayyom | Director General, EPA-AJK |
| Dr. Aurangzeb Khan,  | Director , EPA-AJK |
| Dr. M. Bashir Khan | Chief, P&D-AJK |
| **Tuesday, 28-05-2013** |  |
| 10:00-16:00 | Mr. Asif Shuja Khan | Director General, Pak-EPA, Islamabad |
| Mr. Ahsan Rafi Kiani,  | Deputy Director, Pak-EPA, Islamabad |
| **Wednesday, 29-05-2013** |  |
| 10:00-11:00 | Mr. Jawad Ali Khan | Former DG/NPD-NIEMSMinistry of Climate Change & Environment |
| 13:00- 15:00 | Mr. Qalb e Abbas | Assistant Chief, EAD, Islamabad |



Annexure-D: Project activities and their status of implementation

| **No.**  | **Out puts**  | **Proposed activities**  | **Achievement**  |
| --- | --- | --- | --- |
| **1** | **To review and analyze the current situation of environmental data/information management in Pakistan** |
| 1.1 | A comprehensive report on current situation of environmental data/ information management in Pakistan | Review of relevant literature and work carried out under pertinent previous and ongoing initiativesIdentification of the organizations 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 informationAnalysis 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.  | A number of reports were prepared under NEIMS Project which also includes provincial and regional environmental profiles. A complete list of reports prepared under the Project has been provided in Annexure-C. The Resource Directory of Pakistan did contain information about organizations generating primary and secondary data on environment. Environmental profiles of Sindh, Khyber Pakhtunkhwa, Punjab, Baluchistan, AJ&K and Gilgit-Baltistan have been prepared. Four workshops were held at Mirpur, Karachi, Peshawar and Lahore for the review and finalization of Provincial Environmental Profiles of AJ&K, Sindh, KPK and Punjab. The outcome of these workshops was in the shape of standard guidelines for the preparation of future Provincial Environmental Profiles and National State of Environment Reports. Furthermore, these workshops raised awareness amongst stakeholders about the importance of having reliable and uniform environmental data in Pakistan. The draft copies of all the reports were circulated among stakeholders at federal and provincial levels for their views/comments. The views/comments received from the stakeholders were shared with the consultants to incorporate them in the final reports. Data sets, indicators and indices for monitoring the state of environment in Pakistan was finalised in consultation with the stakeholders.The sector specific and inter sectoral database of environmental information in the country was identified and as a result 92 indicators were established out of which there are 20 core indicators. In order to establish these 92 indicators, a total of 435 variables have to be measured. Consultations with stakeholder were carried out in workshops to finalize the indicators. After finalization of 92 indicators, a test run was carried out. |
| 1.2 | Data sets, indicators and indices for monitoring the state of environment are finalised in consultation with the stakeholders. |
| **2** | **To establish an appropriate institutional and technical framework for NEIMS Pakistan;** |
| 2.1 | Institutional and technical framework for NEIMS Pakistan has been developed, finalized in consultation with stakeholders and formally notified by the Government. | 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/clarifications of their roles and responsibilities. Development of draft institutional and policy framework to facilitate and regulate the collection, integration, harmonization’s, storage, analysis, presentation and dissemination of data/information for NEIMS. Development of draft technical framework for NEIMS including application, data infrastructure, data architecture, data standards and guidelines.Stakeholders’ consultations with a view to finalize institutional and technical framework.Working out details and cost estimates of sectoral and inter-sectoral data banks 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/adaptation/implementation of the technical and institutional framework for NEIMS.  | Based on the National Environmental Sustainable Indicator Study (NESIS) a hand book was developed. The handbook contained 92 core environmental indicators on each of the following areasAtmosphre: Air pollution and ambient air qulaity/climate change etc. Biodiversity: forestory etcEnergy: Transport etc.Environmental economics: Pakistan’s economy etc. Human Settlement: Demography/Population etc.Land: Land use and degradation/agriculture etc. Natural disaster: Flood/EarthquakeWater: Water resources, use, pollution and quality/Waste generation and treatment. The hand book was widely circulated amongst all the nodal agencies for their views and comments. The response received was incorporated in the hand book, which provided a framework for the future collection of new evironmental data. The hand book gives the format on which the environmental information/data has to be provided.  |
| **3** | **To develop sectoral and inter-sectoral database of existing environmental information in the country;** |
| 3.1 | Sector specific databases (such as water and wastewater, 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 with GIS. | Development of sector specific data bases of the existing environmental information in the country in collaboration with each of the nodes in line with the relevant data standard.Integration of the above data bases into a centrally coordinated inter-sectoral databases and with GIS to be maintained by the focal AgencyPreparation and publication of environmental Atlas of Pakistan.Development of specific websites with a view to provide free information to the general public.  | SUPARCO acquired, processed and analyzed satellite imagery of years 2000, 2005 and 2010 for forestry, biodiversity, desertification, settlements, rocky areas and water bodies. They have also used other environmental datasets already available with different organizations for many years. Since the data is spread over time, they can help to identify patterns of environmental changes. The system also contains information on glaciers, natural disasters and land use.SUPARCO acquired environmental data through a remote sensing satellite. The data has not been verified with on-ground information. On-ground data verification at the national level is an expensive exercise which requires extensive human resources. However, the web based GIS/RS application for environmental monitoring application in Pakistan has the ability to incorporate corrections to its datasets based on physical data submitted by research. SUPARCO conducted studies for 17 Pakistani cities to capture urbanization and industrialization trends by analyzing the land used by residential units and industries in 2000, 2005 and 2010. The land use analysis and urban sprawl of 17 cities of Pakistan has been prepared by SUPARCO on the basis of best international practice. The preparation of Environmental Atlas of Pakistan was contracted to University of Peshawar. However, the Atlas could not be prepared as the consultant has gone overseas for medical treatment.  |
| 3.2 | Preparation and publication of environmental Atlas of Pakistan. |
| **4** | **To establish functional National Environmental Information System** |
| 4.1 | National Environmental Information Management System with decision support system is establihshed and functional.  | Procurement, installation, commissioning of equipment and information management tools and technologies.Networking amongst the focal agency and nodes | SUPARCO has developed web based GIS/RS application for environmental monitoring in Pakistan. The application can carry out analysis of dominant environmental changes at national level covering parameters such as air, water forestry, biodiversity, desertification, sea surface temperature and forecasting.The hardware and software identified by the SUPARCO have already been procured by the Project (including ArcGIS Server 10.1). Now, web based GIS/RS application for environmental monitoring in Pakistan is ready for deployment and parking space for web hosting has been arranged with COMSATS Data Centre, Islamabad. The hardware and technical equipment for the establishment of EMIS Cells at the nodal agencies have been provided by the Project.Audio-visual centre and fully equipped mobile centre i.e., “Environment on wheels” were not be established due to concerns on its viability.  |
| 4.2 | Audio-visual centre and fully equipped mobile centre i.e., “Environment on wheels” is established in Pak EPA for dissemination of environment related information among general public and in rurak areas respectively. |
| **5** | **Capacities of key organisations involved in establshment and sustainable operation of NEIMS strengthened** |
| 5.1 | Assessment of training needs of relevant organizations and design of training plan. | Assessment of training needs of relevant organizations and design of training plan.Implementation of the training plan, including on the job training | The focal agency for hosting and updating of NEIMS will be MoCC whereas; EMIS Cells will be established at all nodal agencies. These Cells will be responsible to provide support in the collection, compilation, sharing and dissemination of environmental data and information on continued basis.In order to support the establishment of EMIS Cells at the nodal agencies, NEIMS Project has out-posted one Information System Specialist (ISS) in each nodal agency. Furthermore, they were provided with one Medium End Server, one Server Rack, 3 Dsktop Computers, 2 UPS for computers, one Toshiba Multi-function Photocopier and one HP Printer 2055 N. Two training courses were organized by SUPARCO to help the officials from stakeholders to expose them to various tools and methods available for identification, collection, compilation and analysis of environmental data from different sources and integrate them with geospatial data, and its dissemination through the EMIS. However, SUPARCO will impart training to the officials of nodal agencies.  |
| 5.2 | Implementation of the training plan, including on the job training |