Inception and Training Workshop on Establishment of Environmental Data and Information Management System for South Asia

Colombo, Sri Lanka
09 – 10 February 2010

Workshop Report

Organised by
South Asia Co-operative Environment Programme (SACEP)

In collaboration with
United Nations Environment Programme (UNEP)
Inception and Training Workshop on Establishment of Environmental Data and Information Management System for South Asia

Date: 09 – 10 February 2012
Venue: Galadari Hotel, Colombo, Sri Lanka

Day One – February 09

1. Introduction

South Asia Co-operative Environment Programme (SACEP) in collaboration with United Nations Environment Programme (UNEP) organized a two day Inception and Training Workshop on Establishment of Environmental Data and Information Management System for South Asia on 9 – 10 February 2012 at Colombo Sri Lanka.

2. Attendance

The workshop was attended by two participants from each member countries of SACEP namely Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. It was also attended by resource persons from UNEP – Nairobi, Development Alternatives – India, UNEP-RRCAP and National Environmental Information Management System Project of Pakistan.

The List of Participants is in Annex I.

3. Inauguration

3.1. An opening ceremony was held in the morning of 1st day with the participation of Hon. Anura Priyadarshana Yapa, Minister of Environment, Government of Sri Lanka as the Chief Guest. A number of invitees representing, government agencies, diplomatic missions, media, workshop participants, etc. attended to the opening ceremony.

3.2. At the opening ceremony, Ms. Jacintha S. Tissera, Officiating Director General of SACEP welcomed participants and introduced SACEP. On behalf of UNEP, Dr. Subrata Sinha, Environmental Affairs Officer of UNEP ROAP delivered opening remarks and also welcomed the gathering. This was followed by the welcome address of Mr. M. M. U. D. Basnayake, Secretary, Ministry of Environment, Sri Lanka on behalf of host government.

3.3. Hon. Anura Priyadarshana Yapa, Minister of Environment, Government of Sri Lanka in his keynote address stated that this activity is a timely one as the new world order is converting and changing towards green revolution, sustainable development, ecofriendly development practices vis a vis to counter climate change impacts. He
also mentioned that the global leaders will review the progress of last 20 Years at the up-coming Rio+20 Summit and the proposed Environmental Data and Information Management System would assist immensely to the South Asian leaders to understand the position of the sub-region.

3.4. The opening ceremony was ended with the vote of thanks delivered by Mr. W. K. Rathnadeera, Senior Programme Officer of SACEP.

4. **Technical Sessions**

4.1. After the self introduction of the participants and the resources persons, Dr. Subrata Sinha, Environmental Affairs Officer of UNEP ROAP briefly outlined the objectives of the workshop and introduced the agenda. The agenda is in Annex II

4.2. Country Presentations: Each country was given 10 minutes to present their country status including Environmental Monitoring Systems/Networks, Data availability and data gaps. There was a discussion followed by each presentation. Country presentations are in Annex III.

4.3. Case Study Presentations by Resource Persons

There were three case studies presented by three resources persons followed by a discussion.

Mr. Anand Kumar, Senior Programme Manager of Development Alternatives, India presented the case study on Environmental Information System of India.

Mr. Tim Aung Moe, Head, Knowledge Support Component of the UNEP RRC.AP presented a case study on data harmonization and he explained the example of UNEP e-KH.

Mr. Mahboob Elahi, National Project Manager of National Environmental Information Management System Project of Pakistan presented a case study of ongoing National Environmental Information Management System Project of Pakistan.

Presentations are in Annex IV.

4.4. Presentation on Summary of the Questionnaire

A questionnaire was circulated among all member countries of SACEP in order to get the basic idea of the ground situation with regards to the environmental monitoring and statistics in each country. All countries responded well and SACEP summarized the information provided. Mr. W. K. Rathnadeera, Senior Programme Officer of SACEP presented the findings which followed by a discussion. The summary of the analysis is in Annex V.
4.5. Elements of Regional Data and Information Management System
Mr. Johannes Akiwumi, Head, Data and information Management Section, Division of Early Warning and Assessment, UNEP gave a presentation on Elements of Regional Data and Information Management System. In his presentation, he explained importance of data harmonization/standardization, data sharing mechanisms, use of state-of-art ICT and regional coordination and national level activities which are essential part of an information management system. Annex VI

4.6. Mr. W. K. Rathnadeera of SACEP introduced the project proposal on Establishment of Environmental Data and Information Management System for South Asia and explained the elements of the proposal. He stated that it was a member countries request at the 9th Governing Council of SACEP which requested SACEP Secretariat to include Environmental Data and Information Management to its work plan. He further stated that the draft proposal was circulated among member countries for comments. The proposal was approved by the 11th GC of SACEP. Annex VII

4.7. Mr. Johannes Akiwumi of UNEP introduced the UNEP-Live web platform which aligns with initiatives being undertaken at global, regional and national levels to improve data availability, quality and accessibility. He said, it is being prototyped to create and share the knowledge needed for future assessments. It focuses on leveraging partnerships to enable countries to better collect, manage and analyze their environmental knowledge, information and data. It also seeks to harness emerging technologies that are changing the way in which environmental data can be collected and used – for example mobile phones measuring environmental conditions or being used for reporting environmental destruction and crime as they happen, make it possible for citizens to influence environmental decision-making. Annex VI

4.8. The first day of the workshop closed with a discussion session.

Day Two – February 10

4.9. Mr. W. K. Rathnadeera gave a brief summary, highlighting the topics and lessons learned from the first day.

4.10. Mr. W. K. Rathnadeera presented the draft project plan in which he briefly explain on scope, objectives, project deliverables and a time frame. Annex VIII

4.11. Group discussion on draft project plan

The participants were divided into 2 groups. As there were two participants from each country, both groups had a participation of all SACEP member countries.
Both groups were told to come up with possible road map for the implementation of the project.

Resources persons were ask to facilitate the discussion of two groups.

5. **Workshop Recommendation**

5.1. Each group gave a brief presentation on the recommendations which should consider to draw a Road Map. Annex IX

5.2. There was a plenary discussion, leading to the eventual approval of a consolidated list of recommendations which will go to the Road Map. Annex X

5.3. All participants were thanked for their lively and informative participation, and the workshop was officially closed.
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### UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP)

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Inception and Training Workshop on Establishment of Environmental Data and Information Management System for South Asia
9 – 10 February 2012, Colombo, Sri Lanka

Provisional Agenda

**Day One**

**Opening Session Facilitator**  SACEP

08.30 - 09.00 : Registration of the participants

09.00 - 10.00 :
- Inauguration
  - National Anthem
  - Lighting of Oil Lamp
  - Welcome Address by SACEP
  - Opening Remarks by UNEP
  - Speech by Secretary, Ministry of Environment, Sri Lanka
  - Keynote Address by Chief Guest, Hon. Minister of Environment, Sri Lanka
  - Vote of thanks by SACEP

10.00 - 10.30 : Tea Break

**Session I**

Facilitator  SACEP

10.30 – 10.40 : Self introduction of participants

10.40 - 11.00 :
- Introduction to the workshop by UNEP
  - Objectives
  - Agenda
  - Discussions

11.00 - 12.30 :
- Country Presentations - 10 minutes each country, focusing on
  - Environmental Monitoring Systems / Network
  - Data availability
  - Data gaps

12.30 - 13.30 : Lunch
Session II
Facilitator: Mr. Ajith Silva, Director Policy & Planning and Director Biodiversity, Ministry of Environment, Sri Lanka
13.30 - 14.15: Case Study Presentations by Resource Persons
- Case Study Presentation by DA on India Environment Information system
- Case Study presentation by UNEP-RRC-AP on data harmonization
- Case Study presentation by National Environmental Information Management Systems, Pakistan

Session III
Facilitator: Mr. Nilkanth Ghosh, Statistical Adviser, Ministry of Environment & Forests, Government of India
14.15 - 15:05: Presentation by SACEP on Summary of the Questionnaire: 30 Minutes
  - Discussions
15.05 - 15.45: Presentation by UNEP on Elements of Regional Data and Information Management System (30 minutes presentation)
  - Data harmonization/standardization
  - Data sharing mechanisms
  - Use of state-of-art ICT
  - Regional coordination & National level Activities
15.45 - 16.15: Tea Break

Session IV
Facilitator: Mr. Mahboob Elahi, National Project Manager, National Environmental Information Management System Project, Pakistan and Former Director General of SACEP
16.15 - 16.55: Introduction to the Project Proposal by SACEP and UNEP
16.55 - 17.15: Introduction of UNEP-Live and Outcome of Eye on Earth Summit
17.15 - 17.45: Discussion
17.45: Close of the Day
# Day Two

## Session V

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>09:00 - 09.10</td>
<td>Recap of previous day work, by SACEP</td>
</tr>
<tr>
<td>09.10 - 09.30</td>
<td>Introduction of the Draft Project Plan by SACEP</td>
</tr>
<tr>
<td>09.30 - 10.15</td>
<td>Group Discussion on Draft Project Plan (2 -3 Groups)</td>
</tr>
<tr>
<td>10.15 - 10.45</td>
<td>Tea Break</td>
</tr>
<tr>
<td>10.45 - 12.30</td>
<td>Continuation of Group work</td>
</tr>
<tr>
<td>12.30 - 13.30</td>
<td>Lunch</td>
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## Session VI

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>13.30 - 15.00</td>
<td>Discussion on funding options and way forward</td>
</tr>
<tr>
<td>15.00 - 15.15</td>
<td>Tea Break</td>
</tr>
<tr>
<td>15.15 - 16.30</td>
<td>Views / Comments by countries and proposed follow up action</td>
</tr>
<tr>
<td>16.30</td>
<td>Close of the workshop</td>
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</table>
ISLAMIC REPUBLIC
OF
AFGHANISTAN

National Environmental Protection Agency
NEPA
Country Presentation
Feb-2012

AFGHANISTAN

Geographic setting:
Afghanistan is a mountainous country. And rugged, land-locked country in south central Asia it is bordered by Pakistan, Iran, Turkmenistan, Uzbekistan, Tajikistan, and China is dominated by the majestic Hindu Kush whose peaks rise to over 7000m, and associated mountain ranges extending across the country in a northeast to southwest arc. Traversed deep valleys these mountains separated plains north and Southwest.

NEPA
National Environment Protection Agency ,NEPA
According to the article 15 of the Constitutional Law of Afghanistan was established in January 2003 as an independent agency to combat Environmental degradation.
NEPA has 34 sub-province offices.
NEPA has more than 850 staff

NEPA Achievements
- Environment law
- Environment Strategy
- Environment Policy
- EIA Policy
- Draft of Pollution Regulation
- Protected Area Action Plan
- EIA Regulations
- EIA Guideline
- Draft of Air Pollution Regulation

Continue…
- EIA Implementation
- Implementing Some Sustainable Development Programs
- Get International Environmental Conventions Membership
- Kabul Air Quality Strategy
- Establishment of Public Awareness Department
- Establishment of Environmental Coordination Committee
- Establishment of High Commission Combat Air Pollution
- National Climate Change Impact Assessment Committee
Continue….

- Vehicles emissions standards
- National Environmental Action Plan
- Protected Areas Regulation
- National Environmental Advisory Council
- Controlled of Air Pollution
- Installed of Air Quality Control Machines
- Stopped Polluted Factories Activities

Continue….

- National Biodiversity Strategy
- National Biodiversity Action Plan
- National Waste Management Policy
- Ozone Depletion Substances Regulation
- NAPA, NCSA Reports
- INC Report (under process)

NEPA Monitoring Network

This Network Activities Generally Effect these area:

1. Air and Water Quality
2. Sewage Management
3. Inorganic and Toxic Waste Management
4. Detection of Environmental Policy and Strategy
5. Biodiversity
6. Sustainable Development

Continue….

Biodiversity:
- NEPA Announced In Afghanistan more than 48 kinds of Flora and Fauna are endangered Species.
- More than 90 kinds of Flora and Fauna are ready to add in this list by NEPA in the next.
- More than 800 kinds of Flora and Fauna or under the yellow list.

Continue….

Kinds of Factories

- Food products factory
- Bakery
- Beverage products factory
- Make up materials factory
- Salt products factory
- Washing materials products factory
Continue...

- Oil factory
- Therm (Bathrooms)
- Hotels and Restaurants
- Water materials products (water and hand pumps) factory
- Liquid Gas installation and distribution factory
- Stone crush factory
- Cement products factory
- Asphalt products factory
- Mineral products factory
- Oil pump station
- Maine products factory
- and also more than 294 different factories also.

Afghanistan Protected Area

1. Ab-e- Estada (Ghazni) National Park
2. Ajur Valley National Park
3. Bamiyan National Park
4. Darqad (Takhar) Wildlife Management Reserve
5. Hamun-i-Puzak Waterfowl Sanctuary
7. Imam Sahib (Kunduz) Wildlife Managed Reserve
8. Khulm Landmark Protected Area
9. Dasht-e-Nower Waterfowl Sanctuary
10. Kole Hashmat Khan Waterfowl Sanctuary
11. Northwest Afghanistan Game Managed Reserve
12. Nuristan National Park
13. Pamir-i-Buzurg Wildlife Reserve
14. Registan Desert Wildlife Managed Reserve
15. Zadran National Reserve

Future Plane

- Implementation of environment law, strategy and policies
  - Climate Change Project
  - Training and Capacity Building
  - Legal and Regulatory Frameworks
  - Environmental Education, Awareness and Outreach
  - Environmental Database (EDBMS)
  - Air & Water Quality Equipments
  - Establish Environmental Experts Committee
  - Capacity building and Public Awareness
  - Soil Erosion and Desertification Programs
  - Joint to International Environmental Conventions

Continue....

1. Overall review of the national state of Environment
2. Human Environment
   - Harmonization of Environmental Standards
   - Environmentally Sounds Technology
   - Cleaner Production
   - Urban Environmental Management (in relation to air quality, water quality and solid wastes)
   - Establishment of Environmental Management Systems in production and Service Units
   - Environmental Impact Assessments
3. Natural Environment and Biodiversity
   - Joint efforts for Conservation of Trans-boundary Wetlands and Water bodies
   - CoP Preservation and Management of water resources.
   - Drafting Joint Studies on Wildlife Migration Patterns, Mortality rates and contagious Diseases.
   - Well-coordinated Management of Ecosystems relating to endangered species.
   - Sustainable Development of Ecosystem
   - Restriction on the introduction and international trade of Alien Fauna and Flora
   - Exchange of Taxidermy specimens.
   - Combating Desertification, Deforestation, land Erosion and protection of mountain Ecosystem.
   - Ozone layer Protection and to stop the use of CFCs, etc.
   - Capacity building and Institutional Developmental programs for Afghanistan.
   - Synergies and interlink age between related International Environmental Agreements
4. Cooperation on Climate Change and Global Warming issues
5. Environmental education, Training research and Development
6. Research and Development on Environment friendly sources of Energy
7. Regional Cooperation
8. Establishing an Environmental Monitoring legal framework
9. International Cooperation
10. Obstacles on the implementation of the Plan of Action in ECO Members States.
11. Major achievements of implementation of the Plan of Action in ECO Region.

The National Environmental Protection Agency (NEPA) of the Islamic Republic of Afghanistan presents its ideas, commitments, and suggestions to the Economical Cooperation Organization to cooperate the Government of Afghanistan in the field of Environment among member states.

Environmental Overview
Before NEPA Establishment
Three decades of war combined with seasonal drought resulted in:
- Deforestation.
- Range land destruction.
- Air pollution.
- Soil erosion
- Water shortage and pollution.
- Land slides.

Environmental Public Awareness
- Public Awareness
- Magazine
- Brochures
- Media (video clips)
- Environmental Events News
- Seminars and Workshops
- School and University

Environmental Challenge
- Insecurity.
- Lack of Public Awareness.
- Inadequate Funding.
- Inadequate technical capacities.
- Poverty.
- Weak inter-Institutional coordination mechanisms.
- Lack of Governmental/Private Sectors Cooperation.
- Weak environmental institutions
International Environmental Conventions

1. UNCBD
2. UNCCD
3. UNFCCC
4. BASEL
5. VINNA
6. CITES
7. CMS
8. RAMSAR
9. STOCKHOLM
10. ROTTERDAM

Cooperation Agency Donors

- UNEP
- WORLD BANK
- UNDP
- USAID
- ACC
- ADR
- WCS
- ICIMOD

Thanks for Your Attention
Environmental Monitoring and Networking System in Bangladesh

Syed Nazmul Ahsan
Deputy Director
Department of Environment (DoE)

Md. Khabir Uddin Khan
Programmer
Ministry of Environment and Forest (MoEF)
Govt. of Bangladesh

Environmental Monitoring

- Water Quality Monitoring
- Air Quality Monitoring
- Compliance Monitoring & Enforcement

Water Quality Monitoring

- Water quality monitoring is key to management planning and policy feedback
- Water pollution is harmful for human health and other living beings/ecoology
- National Data Base for development

Monitoring Statistics, 2010

River - 31
Monitoring Points - 102
Monthly Monitoring - 42 points (cover 13 rivers)

Division wise monitoring

- Dhaka - 9 rivers (25 points)
- Chittagong - 3 rivers (10 points)
- Rajshahi - 2 rivers (8 points)
- Khulna - 8 rivers (36 points)
- Sylhet - 2 rivers (8 points)
- Barisal - 1 rivers (2 points)

Water Quality Parameters

- 12 parameters (physical & chemical) monitored but inconsistently
- 7 parameters (pH, DO, BOD, COD, TDS, Chloride, Turbidity) used for analyses

BOD and DO level of Buriganga River

Calendar Year 2010
**Summery**

- Water quality of Padma, Meghna, Jumuna, Dhaleshwar, Surma, Korotua river was within EQS
- Rivers around greater Dhaka were highly polluted during the first four or five months of 2010 in terms of DO, BOD and COD. No dissolved oxygen was found from January to May at different location of Buriganga, Balu, Shitalakhya and Turag River.

**Recommendations**

- Centralize Database (all region from a single database)
- Web based Database
- Fully Online
- Judicious selection/redefine the sampling locations.
- Use Global Positioning System (GPS) to represent monitoring results in global context.
- Undertake capacity building programme of the laboratory (both human and logistics capacity)

**Air Quality Monitoring**

- 07 Continuous Monitoring Stations (Dhaka-2, Chittagong-1, Rajshahi-1, Khulna-1, Sylhet-1, Barisal-1)
- Satellite Monitoring Stations at different district offices
- 01 Transboundary Air Quality Monitoring Station-Satkhira district

**Air Quality Scenario in Bangladesh (At a Glance)**

- Major cities are highly polluted despite major efforts has been taken.
- PM is the most significant problem pollutant, especially during the winter season
- Known sources of pollution:
  - Older, smoke-emitting diesel buses and trucks
  - Dense, congested traffic that is growing worst.
  - Industrial emission sources including brick kilns (uncontrolled)
  - Many area sources of open burning, dust and small industries.
Pollutants of concern for Bangladesh

Major Sources of Air Pollution (PM) in Dhaka

- Vehicular Air Pollution (More than 80% from diesel vehicles)
- Biomass Burning and Brick Kilns (Quantification work being undertaken)
- Re-suspended Road dust
- Fugitive Emission (Different Industries)

Trends Analysis of Particulate Matter in Capital Dhaka

Air Quality in Dhaka: Seasonal Trend

- Monsoon period – Air Quality OK
- Non-monsoon period – Air Quality is poor

Note: PM is the major pollutant of concern in Dhaka.

Recommendations

- Centralize Database (all region from a single database)
- Web based Database
- Fully Online
- Undertake capacity building

Way Forward

- Clean Air and Sustainable Environment (CASE) Project
- Project Cost: 44501.64 (In Lakh Taka)
- Project Duration: July 2009 to June 2014
- Implementing Agencies: DOE, DCC, and DTCB
- Lead Agency: MOEF

Reduction of Urban air pollution by 20 to 80% would result in saving 1200-3500 lives annually and avoiding 80-230 million cases of ill health. (WB)
Compliance Monitoring and Enforcement drive at a glance
From July 2010 to October 2011

Nature of Environmental Pollution/Degradation found in Enforcement Drive
- Illegal construction of brick field by damaging agro land.
- Damaging water bodies by discharging toxic effluents.
- Emission of hazardous smokes by using undersize chimney in brick fields.
- Illegal burning of fire woods in brick fields.
- Destroying ecology by illegal hill cutting.
- Developing housing projects by filling water bodies and rivers.
- Sound pollution by power generators/vehicles/workshops/machineries
- Sound pollution by heavy piling works.
- Water pollution by oil spillage from ships in the Bay of Bengal.

Continued…
- Throwing solid garbage into rivers/water bodies from industries.
- Illegal construction of buildings by damaging hills.
- Releasing hazardous smokes from still mills by keeping off chimneys.
- Releasing untreated chemical effluents from dyeing factories through by pass lines.
- Construction of brick fields by encroaching rivers/water bodies.
- Supplying impure drinking water in hotels and restaurants.
- Using residential houses as chemical godowns/industries.
- Manufacturing poultry feeds by using toxic waste of tanneries.
- Obstructing water flow of canals and rivers by erecting illegal structures.
- Constructing illegal brick fields by damaging mangrove forest.

Compensation
- Compensation imposed : 52 crore taka
- Compensation realized : 23.98 crore taka

Experiences from Enforcement drive
- Conditions in the Clearance Certificates given by DoE remain non-complied/undercomplied.
- Industries having ETP’s are found non-functional
- Owners start functioning of ETPs when the Enforcement team enters the factory.
- Weaker follow up action/monitoring by DoE after issuance of environment Clearance Certificate due to lack of manpower and logistics.
- Factory owners’ conceal the incident of using by pass line even after detection by Enforcement team.

Positive Impact of Enforcement drive
- Trend to install ETP has seen increased.
- Non-functional ETP’s are made functional to avoid penalty.
- Environmental awareness among owners has been increased
- Desperate river grabbing and pollution has gradually decreased
- Influential businessmen/industrialists frequently visit DoE and seeking guide lines on environmental management, which has been neglected earlier.
- Indiscriminate pollution by industries has come down following imposition of compensation.
- New ETP consulting companies have been emerging to meet up the demands of Industries lacking proper environmental management.
**Recommendations**

- Develop online Environmental Information System
- Undertake capacity building

**Thank you**
Overview of Environmental Data and Information at NEC, Bhutan

Tshering Tashi & Rinchen Penjor
National Environment Commission
Bhutan

Inception & Training Workshop on Establishment of Data and Environmental Information Management System for South Asia
9 – 10 February 2012

Outline

- Data maintained at NEC
- Gaps and plans
- Data/Info at other institutions

1. Env. Information Mgmt. System

- Based on framework in BEO 2008
  - Indicators: Pressure, State, Response
  - Domains: Land, Air, Water, Biodiversity
  - Data from BEO assessment
- Data collection
  - Personal visit to collect from sources
  - For updates, considered direct submission by partners into EIMS
    - But, need verification and monitoring
- Storage:
  - Local Storage
  - MS Excel worksheets
  - Online
    - Microsoft, ASP, SQL, & Crystal Reports

EIMS Website
http://www.nec.gov.bt/eims/

2. Greenhouse Gas Inventories

- 1st Inventory:
  - Base year: 1994
  - Sources: Energy, Industrial processes, Agriculture, LUCF
  - Status: Published and online
- 2nd GHG Inventory
  - Base year: 2000
  - Sources: Energy, Industrial processes, Agriculture, LUCF, Wastes
  - Status: Published and online
- Method
  - IPCC methodology (Indirect – activity data & conversion factors)
  - Multisectoral task force
- Format
  - Narrative report
  - Spreadsheets

Anthropogenic GHGs
CO₂, CH₄, N₂O, NOₓ, CO, NMVOC, SO₂

www.nec.gov.bt/climate
3. Inventory for Malé Declaration

“Malé Declaration on the Control and Prevention of Air Pollution & its likely Trans-boundary Effects for South Asia”

- National Emission Inventory (2005) of Air Pollutants
  - SOx, NOx
- Networking for National Stakeholders for Air Pollution
- Results online @ http://www.rrcap.unep.org/male/baseline/indexbhu.html

4. Air Quality Monitoring

- Ambient Air Quality Monitoring
  - Particulate Matter (PM10)
  - Intermittent since 1994 in Thimphu
  - Recent MOU with Sherubtse College (Kanglung) & College of Science & Technology (Kharbandi)
- SOx, NOx, CO
- Limited monitoring since 2004 in Bhur (Male Project) and Thimphu
- Industrial emissions monitoring
  - Recent (with Env. Unit MOEA)
  - Standards for SPM, SOx, NOx, CO

5. Water Quality Monitoring

- Since 1997
- Major river basins – pre and post monsoon
- Parameters (6 in 1997, now 30)
  - Physical parameters
  - Temperature, Color, turbidity, conductivity etc.
  - Chemical parameters
  - pH, Alkalinity, DO, Nitrates, Phosphate, Chloride, etc.
  - Biological parameters
  - Bacteria (E.Coli), Algae, BOD, etc.
- Ecological status of rivers, streams
- Industrial effluents
  - Recent monitoring
  - In line with estb of standards

6. Chemicals

- Linked to UN Chemical Conventions
- Survey of ODS use in Bhutan
  - To meet phase out schedule as per Montreal Protocol
- Hazardous chemicals
  - Informal survey by ADB
7. Environmental Clearances

- Regulatory process for EIA of projects
  - Environmental Clearance info & conditions
  - Types of activity
    - Industry, road, hydro, transmission lines, etc
  - Administrative information
    - Location, proponent etc

- Storage
  - Hard copy files & Register
  - Online clearance system

www.nec.gov.bt/ecs

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**Gaps and plans**

**Gaps & Needs**

- Air Quality
  - Lack of specialists
- Water resources
  - New apex body for Water Resource Coordination
  - HR and Funds for new division
- Environmental Quality Laboratory
  - Lab equipment & personnel
  - equipment for industrial emissions
- Climate Change
  - Appropriate models & training
- Data management
  - Appropriate, scalable software
  - Spatial referencing

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**Plans underway**

- Add spatial dimension to data collection
  - Training of DEOs and NEC staff in GIS & GPS
  - Data collection in field for
    - Environmental clearances and projects monitoring
    - Air and Water Quality monitoring
- Increased coverage of Air & Water monitoring
  - Air quality stations to more areas
  - Water resources inventory

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**Other agencies & related info. systems**

- National Statistics (Socio Economic), National Statistical Bureau
- Forest Information Management System, Department of Forest
- Biodiversity DB, National Biodiversity Center
- DrukDIF, National Land Commission
- Disasters, Department of Disaster Management, MOHCA (UNDP, Department of Geology and Mines)
- Vehicle Emissions, Road Safety and Transport Authority & 2 private agencies
- BhutanINFO (NSB, UN Agencies)
- Health information MS, Ministry of Health
- Waste surveys, Ministry of Works and Human Settlement, Royal Society for Protection of Nature
- Hydro meteorology, Department of Hydro Meteorology
- Wellbeing/GNH indicators: Center for Bhutan Studies
- Etc...
Institutional framework of environment programme.
- Department of environment-1980
- Ministry also acts as nodal agency for country for United Nations Environment Programme (UNEP) and other international/multilateral agencies/programme on environment

Ministry of Environment & Forests (MOE&F)
- Broad Objectives-
  - Conservation and survey of flora, fauna, forests and wildlife
  - Prevention and control of pollution
  - Afforestation and regeneration of degraded areas
  - Protection of environment and ensuring the welfare of animals.

Initiatives By C S O
- Environment issues- multi-disciplinary subject.
- Difficult to collect, analyse and study relationship with them.
- Conference of centre and State Statistical Organisations(COCSSO)-1985
- Provisional list of variables suggested in 1990.
- Steering committee on Environment Statistics was constituted under chairmanship of DG, CSO in 1996.

- Set of regulatory and legislative measures for preservation, conservation and protection of environment.
- National Forest Policy,1988
- Statement on Abatement of Pollution,1992
- National Environment Policy,2006

- 1997 – Draft framework for Environment statistics discussed, Items for data collection identified, source agencies also identified.
- Since then it regularly being brought out by the CSO.
Contents

- Present scenario of environment degradation, causes and concern.
- Bio-diversity, Land/soil, Water and human settlements.
- State Govts-similar publication.

Objectives (Long-term)

- To build up a repository and dissemination centre in Environmental Science and Engineering;
- To gear up the modern technologies of acquisition, processing, storage, retrieval and dissemination of information of environmental nature; and
- To support and promote research, development and innovation in environmental information technology.

(Short-term)

- To provide national environmental information service relevant to present needs and capable of development to meet the future needs of the users, originators, processors and disseminators of information;
- To promote, rational and international cooperation and liaison for exchange of environment related information;
- To promote, support and assist education and personnel training programmes designed to enhance environmental information processing and utilization capabilities;
- To promote exchange of information amongst developing countries.

Main Areas of ENVIS Scheme

Thematic Centres
- Chemicals, Wastes and Toxicology
- Environment and Energy Management
- Ecology and Ecosystems
- Flora, Fauna and Conservation
- Media, Environment Education and Sustainable Development

State Centres
- Status of Environment Related Issues

ENVIS - Information Flow

ENVIS website: http://www.envis.nic.in
ENVIS Centre on “Floral Diversity”

- The Environmental Information Systems (ENVIS) Centre on “Floral Diversity” at Botanical Survey of India, Kolkata was set up by the Ministry in the year 1994.
- ENVIS CENTRE on Floral diversity at BSI, Kolkata, is engaged in meeting the task of disseminating information on floral diversity including the rare and Endangered plants to the wide range of users through the vast infrastructural facilities and experienced Scientists of the Botanical Survey of India.
- The main objectives of the centre are to collect and store data on various floral diversities from different eco-regions of India. Economic and Medicinal plants, plants that are used largely for sustainable development, cottage industries, food products and plants that are in the categories of rare and endangered.
- All these information are being disseminated as much as possible through an appropriate database to the different users nationally and internationally and by creating an intranet, by computer network. Every year the centre receives various national and international queries for appropriate answer.

ENVIS website: http://www.bsienvis.nic.in

Glimpse of Database Developed by the ENVIS Centre

ENVIS Centre on “Ecology of Eastern Ghats”

- ENVIS Centre on “Ecology of Eastern Ghats” at EPTRI, Hyderabad was set up by the Ministry in the year 1996.
- ENVIS CENTRE on Ecology of Eastern Ghats is engaged in developing databases on various aspects like expert database, ecology of eastern Ghats, flora and fauna, endangered and endemic species etc. Reference from books, journals, magazines, internet and Universities, collection and updation of Bibliographic database on various aspects of Eastern Ghats.
- The Centre provides national environmental information service relating to above subject area relevant to present needs.

ENVIS website: http://www.eptrienvis.nic.in

ENVIS Centre on "Western Ghats Ecology and Biodiversity"

- ENVIS Centre on “Western Ghats Ecology and Biodiversity” at Indian Institute of Science, Bangalore was set up by the Ministry in the year 1996.
- ENVIS CENTRE on Western Ghats Ecology and Biodiversity is engaged in developing an information database that includes both descriptive information as well as numerical data. Descriptive information in the form of publications, reports, reprints and abstracts on Ecology, Environment, Western Ghats and Biological Diversity will be stored for dissemination. Numerical data are being collected, compiled, processed and analyzed for the purpose of dissemination.

ENVIS website: http://www.eptrenvis.nic.in
Indian - State Level Basic Environmental Information Database (ISBEID)

The ISBEID programme has been initiated throughout the country through State/UT ENVIS Centres. Under this programme, online environmental data in MIS and GIS model up to district level on ENVIS portal of the Ministry. ISBEID consist of following 17 modules:

1. Administrative Profile
2. Infrastructure
3. Energy
4. Agriculture
5. Industries
6. Tourism & Heritage
7. Natural Resource
8. Forest Resource
9. Water Resource
10. Ground Water Resource
11. Ecology
12. Sanitation
13. Water Pollution
14. Air Pollution
15. Bio-diversity
16. Waste
17. Disaster

Indian State Level Basic Environmental Information Database (ISBEID)

- 17 modules—information at district and sub regional level.
- SoER
- State of Environment Atlas – India—on all aspects of green, blue and brown environmental issues in the forms of maps, data, tables, photographs etc—dynamic form.

State of Environment Report (SoER) brought out under the scheme from year 2004-2005

<table>
<thead>
<tr>
<th>Year</th>
<th>State/City</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>Assam, Chandigarh</td>
</tr>
<tr>
<td>2005</td>
<td>Andaman &amp; Nicobar, Chhattisgarh, Daman &amp; Diu, Dadra &amp; Nagar Haveli, Haryana, Jharkhand, Meghalaya, Mizoram, Nagaland, Pondicherry, Tamil Nadu, Delhi, Gujarat, Kerala, Madhya Pradesh, Manipur, Bihar, Maharashtra, Orissa, Punjab, Rajasthan, Sikkim</td>
</tr>
<tr>
<td>2006</td>
<td>Himachal Pradesh</td>
</tr>
<tr>
<td>2007</td>
<td>National SoE Report</td>
</tr>
<tr>
<td>2008</td>
<td>Andhra Pradesh, Hyderabad City, and Uttar Pradesh</td>
</tr>
<tr>
<td>2009</td>
<td>Andhra Pradesh, Karnataka, Uttar Pradesh, Tripura</td>
</tr>
<tr>
<td>2011</td>
<td>Punjab</td>
</tr>
</tbody>
</table>
THANK YOU
Inception and Training workshop on Establishment of Environmental Data and Information Management System for South Asia

9-10 February 2012

Introduction

- 20 Atolls, 1990 Coral islands
- Total Land Area = 300 km²
- Stretch from 7° N to ½° S across the equator
- Most of the islands are less than 1 m above mean sea-level
- Population = 300,000
- Major industries: Tourism & Fisheries
- Male (capital) being the most populous with a population of 103,693

Examples of Sources of Data

- Data on EIA reports
- Coastal Monitoring data
- Data from monitoring of protected area, protected species and sensitive areas
- Water quality data
- Air quality data
- State of the Environment reports (MIOE 2011 ongoing)

Existing Data Management Practices and Recommendations

- Paper files, Computer files on hard drives
- Need for a one stop shop for information

Data Gaps

- Lack of expertise and trained staff is one of the key constraints experienced in the Maldives
- Sparse information and the absence of baseline data
- Public Access to information lacking

Ongoing project

- National GIS database establishment work is underway under Maldives Environment Management (MEMP) project.
Thank you
Inception and Training Workshop on Establishment of Environmental Data and Information Management System for South Asia 9 -10 February 2012 Colombo, Sri Lanka

Outlines of Presentation

- Introduction
- Environmental Data and Statistics in Nepal
- Environmental Monitoring Systems/Network
- Data availability
- Data gaps
- Major constraints

Introduction

- Geographical Setting
  - Latitude: 26° 22’ N to 30° 27’ N
  - Longitude: 80° 4’ E to 88° 12’ E
  - Highest Point: 8848 m. (Mt. Everest)
  - Lowest Point: About 70m. from sea level

- Border
  - North: China
  - South, East and West: India

NEPAL

- Size
  - Area: 147,181 Sq. Km.
  - Average Length: 885 Km. (East to West)
  - Average Width: 193 Km. (North to South)
NEPAL

• Population (2011 Census)
  Household: 56,59,984
  Total Pop.: 2,66,20,809
  Male: 1,29,27,431
  Female: 1,36,93,378
  Growth Rate: 1.40% per Annum

Key Environmental Issues

• Agriculture, Soil and Land Degradation
• Loss of Biodiversity
• Haphazard Urbanization
• Deforestation
• Ground Water Depletion
• GLOF
• Energy Crisis
• Waste Management
• Pollution

Environmental Monitoring System/Network

Laws/ Rules/ Standards
• Environmental Protection Act/ Rules
• MoENV has Authority to formulate Environmental Standard
  Industry Specific Standard-11, Generic -3 Air Quality Standard-3
  Standard of Non Alcoholic Beverage, Pharmaceutical Industries, Sound Pollution are in formulation process

Air Quality Monitoring Stations in Kathmandu (6)

Data Availability

• According to Statistical Act Central Bureau of Statistics of Nepal collects the Environmental Data and prepares Environment Statistics of Nepal (Report) annually
• Ministry of Environment prepares the State of the Environment in regular basis

Data on related area
• data on climate variation
• data on air quality
• land and soil data, land use, livestock, use of fertilizer and pesticides

Data Availability

• data on supply of drinking water provided by various agencies, quality of water, setting standards for water use
• data on other natural resources, extraction of mineral resources, forestry/biodiversity and fuel
• wood consumption and energy consumption, status of renewable energy potential
• solid waste disposal and hazardous waste
• natural disasters
• GLOF
Data Gaps

- Lack of awareness about environmental information's
- There are gaps in terms of desired frequency and desire level of geographic disaggregation
- Many organizations use different methods for collecting, processing, and analyzing and presenting data on their own purpose so that harmonization of environmental data and information is difficult
- The data sharing culture remains weak and information networking and coordination among the line agencies for effective data sharing is not existent
- Quality of data in many areas are very poor and not available in time series data

Major Constraints

- Lack of Policy
- Lack of institutional set-up/coordination
- Lack of financial resources
- Lack of human resources
- Lack of Awareness
- Lack of access to training
- Quality of data

Conclusion

- Developing policy, plans, and programs should be based on accurate data
- There is a need to establish strong data sharing culture, information networking, and coordination system among the line agencies
- Establish the institutional setup and human resources
  - Management of financial resources
  - Capacity building of human resource
  - Strengthen the networking
  - Establish a Data Bank

Thank You
Pakistan Country Presentation
Environmental Monitoring System' Networking

Inception & Training Workshop on Establishment
of Environmental Data & Information Management
System for South Asia
9-10 February 2012,
Colombo, Sri Lanka

Sequence

- Basic Facts
- Legal Requirements
- Existing Facilities
- Data Availability
- Data Gaps

BASIC FACTS

<table>
<thead>
<tr>
<th>Area:</th>
<th>796,095 Sq.Km</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population:</td>
<td>177 Million</td>
</tr>
<tr>
<td>Rural:</td>
<td>65%</td>
</tr>
<tr>
<td>Urban:</td>
<td>35%</td>
</tr>
<tr>
<td>Per capital income:</td>
<td>US$ 1,085</td>
</tr>
<tr>
<td>Export:</td>
<td>Cotton, textile goods, rice, leather items, carpets, sports goods, fruits, handicrafts, Sea Food (Fisheries)</td>
</tr>
<tr>
<td>Languages:</td>
<td>Urdu (National language)</td>
</tr>
<tr>
<td></td>
<td>English (Official)</td>
</tr>
<tr>
<td>Literacy rate:</td>
<td>53%</td>
</tr>
<tr>
<td>Agriculture:</td>
<td>Major crops are cotton, wheat, rice and sugarcane</td>
</tr>
<tr>
<td>Total cropped area:</td>
<td>25.01 million hectares</td>
</tr>
<tr>
<td>Forest Area:</td>
<td>4.8%</td>
</tr>
<tr>
<td>Mean Annual Precipitation</td>
<td>760 and 1270 mm.</td>
</tr>
</tbody>
</table>

Legal Requirements

- Under Pakistan Environmental Protection Act’1997 (PEPA’97), Pak-EPA has to:
  - Publish annual National Environmental Report;
  - Provide baseline data to proponent of new project;
  - Public disclosure

Existing Facilities

- **Environmental Monitoring System has been established. Objectives includes:**
  - To Establish the Monitoring Laboratory Network
  - To Grasp the present environmental situation through environmental monitoring network
  - To Compare the Analytical Data with the National Environmental Quality Standard (NEQs)
  - To secure the scientific knowledge - improving the deteriorated water/air quality
Analytical Laboratories

- Central Laboratory for Environmental Analysis & Networking (CLEAN) has been established at Federal EPA.

- CLEAN is equipped with the latest analytical water quality monitoring equipments.

- Laboratories of Four Provincial EPAs have also been upgraded with analytical equipment.

Fixed Air Quality Monitoring Station

- Seven Fixed Air Quality Monitoring Stations have been installed in Federal & Provincial EPAs

- These are equipped with analytical ambient air quality analyzers to generate a real-time data on air quality at a fixed location.

Mobile Air Quality Monitoring Station

- Three Mobile Air Quality Monitoring Stations have been provided to the Federal EPA, Punjab-EPA and Sindh-EPA.

- These stations comprise of air monitoring trucks having the same analyzers as in the fixed monitoring stations.

- With the help of these stations, the data on air quality at any location under observation can be obtained.

- By using these stations, some other points with higher pollution level may be identified for installation of fixed air quality monitoring stations in those areas in future.

Tabular Report
Graphical Representation

National Data Surveillance Centre

- National Data Surveillance Centre (NDSC) for air quality has been established at Central Laboratory for Environmental Analysis & Networking (CLEAN), Pak-EPA.
- Function of Data Surveillance Centre is to calculate the average data of each parameter received from all the stations.
- The received data is then compared with the Ambient Air Quality Standards.
- At present, Pak-EPA is continuously retrieving data from the provincial EPAs which would be helpful to improve the ambient air quality of Pakistan.

Data Availability

- Two options for data acquisition:
  - Direct from EPAs own surveillance and monitoring
  - Indirect from other organizations in water, energy, agriculture, marine, city governments, international & national agencies etc.

Circuit Diagram of Data Communication System

Structure of Data Communication System

Stack Emission Monitoring

- Five stack emission monitoring vans have been provided to the Federal and Provincial EPAs.
- These monitoring vans are equipped with complete set of stack emission monitoring equipment (PG-250) to be used for sampling and analysis of stack emission of industrial units.
Mobile Water Quality Monitoring Laboratories

- Mobile Water Quality Monitoring Laboratories consist of mobile vans which are also used for stack emission monitoring.

- Five monitoring vans have been provided one each to the Federal and Provincial EPAs.

- These Laboratories have two functions.
  - First is to collect and carry the water samples to the analytical laboratory
  - Second is to analyze the basic parameters and necessary pre-treatment of samples before carrying the samples for laboratory analysis.

Training Facilities

- Under this project, a training centre has been established at CLEAN to provide technical training to the researchers and technical staff of Federal & Provincial EPAs.

- The training component consists of basic concepts of environmental monitoring, initial operational and analytical training and on-job operational trainings.

- Analytical group training course for handling of analytical equipment and sampling apparatus are being organized in CLEAN for Provincial EPA’s laboratory, researchers and staff.

- The training course includes the environmental surveillance and actual counter measure technologies for stationary and mobile sources.

Monitoring Reports

Composition of Monitoring Report

- Monitoring Plan
- Data Processing
- Data Analysis

SOP for Effluent Water (1)

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Alternative Method</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Water Sampling and control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 pH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Alkalinity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 COD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 BOD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 TTO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Nitrogen</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Phosphate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Chlorides</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Total Dissolved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Total Carbonate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 Ammonia carbonate</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SOP for Effluent Water (2)

<table>
<thead>
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<th>Parameters</th>
<th>Alternative Method</th>
<th>Alternative 1</th>
<th>Alternative 2</th>
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<tbody>
<tr>
<td>1 SURFV</td>
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<td></td>
</tr>
<tr>
<td>2 CAN</td>
<td></td>
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<tr>
<td>3 TDS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 PAH</td>
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<td></td>
</tr>
<tr>
<td>5 PAH</td>
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<tr>
<td>6 PAH</td>
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<td>7 PAH</td>
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<tr>
<td>10 PAH</td>
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<tr>
<td>11 PAH</td>
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<td></td>
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<tr>
<td>12 PAH</td>
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<td></td>
</tr>
<tr>
<td>13 PAH</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SOP for Effluent Water (1)
Data Gaps

- Temporal & Spatial data is not well orchestrated to meet the attributes of environmental parameters;
- Reporting units & recording periods are variable;
- Energy crises in the country affect the quality of data;
- Capacity & financial constraints is an impediment;
- After sale & backup services is an issue;
- Law & order situation
Monitoring by High Volume Sampler
National Data Surveillance Centre

Thanks
Environmental Monitoring System in Sri Lanka

Ministry of Environment

Environmental Monitoring covers the following areas:

- Processes and activities that are needed to observe the quality of the environment
- Evaluate the current trends that have an impact on the quality of the environment
- Actions needed to address the environmental issues

Tools for Monitoring

- Legal Instruments-
  - Constitutional provisions
  - Acts, Regulations, Rules and Directives
  - Multilateral Environmental Agreements (MEAs)
    - United Nations Convention on Biological Diversity
    - United Nations Framework Convention on Climate Change
    - Basel Convention on Control of Transboundary Movements of Hazardous Wastes and their Disposal
- Policies and Institutional set-up
- Strategies/Programmes/Action plans

Constitutional Provisions

There are two important provisions in the Constitution of Sri Lanka regarding environment protection:

- Article 27(4): "The state shall protect, preserve & improve the environment for the benefit of the community"
- Article 28(f): It is a fundamental duty of every person in Sri Lanka to protect nature and conserve its riches

Major National Environment Policies

- National Environment Policy
- National Solid Waste Management Policy
- National Watershed Management Policy
- National Wetland Policy

Major Laws and Regulations

- Acts and Regulations
  - National Environmental Act (NEA) Amended in 2000
  - Forest Ordinance Amended in 2009
  - Flora and Fauna Protection Ordinance, Amended in 1988
  - Coast Conservation Act Amended in 1997
  - Soil Conservation Act 1996
  - Environment Regulations under NEA

Multilateral Environmental Agreements (MEAs)

- United Nations Convention on Biological Diversity
- United Nations Framework Convention on Climate Change
- Basel Convention on Control of Transboundary Movements of Hazardous Wastes and their Disposal

Major Plans/Programmes -

- Haritha Lanka Program - Short term, Medium term, and long term activities monitored

This is the umbrella law to prevail over the other environmental laws.

- National Environmental (Amendment) Act Nos. 56 of 1988 & 53 of 2000

The Objectives of the National Environmental Act

1) To establish an Authority called the Central Environmental Authority.
2) To make provisions with respect to the powers, functions and duties of the CEA
3) To make provisions for:
   - the protection, management and enhancement of the environment.
   - the regulation, maintenance and control of the quality of the environment.
   - the prevention, abatement and control of pollution, and
   - matters connected therewith or incidental thereto.

Basic Requirements for Environment Monitoring

- Availability of Environmental Data and Information
  - Sri Lanka Environment Outlook - 2006
  - Caring for the Environment: Path to Sustainable Development 2009-2012
  - National Action Plan for Haritha Lanka Programme
  - Ministry Annual Reports

- Institutional Set-up
- Human Resources
- Financial Resources

Environmental Monitoring Gaps in Sri Lanka

- Shortcomings in inter-Agency Coordination on Environmental data sharing
- Absence of an updated Environmental Statistical Compendium (environment data base)
- Inadequacy of Physical, Financial and Human Resources to implement MEAs –
  - Ex: To prepare an Air Resource Inventory and Air Quality Monitoring system under Male Declaration on Control and Prevention of Air Pollution and its likely Transboundary Effects for South Asia
- Absence of a proper National and Regional Environment Data Sharing Policy and mechanism
- Absence of a common environment monitoring indicators for the region

Recommendations

1. Prepare a mechanism to address the Monitoring of Transboundary Environmental impacts
   - Strengthen the focal implementation institutions to implement MEAs
     - Ex: To prepare Air Resource Inventory and Air Quality Monitoring system under Male Declaration on Control and Prevention of Air Pollution and its likely Transboundary Effects for South Asia
   - Address the environmental impacts in international waters
     - Ex: Prevent spreading of Invasive Species due to ballast water discharge
   - Prepare an inter-governmental mechanism to implement the MEAs
     - Ex: To prevent transferring of Persistent Organic Pollutants (POPs) among Regional Countries

2. Prepare a proper National and Regional Environment Data Sharing Policy

3. Provide advice on the strengthening of linkages between regional and national indicator development and reporting
Environment Data and Information System of India

Presented at the
Inception and Training Workshop on Establishment of Environmental Data and Information Management System for South Asia
9 -10 February 2012, Colombo, Sri Lanka
By Anand Kumar (akumar3@devalt.org)

At present:
- Information on environment components / sectors / factors is scattered
- Not interactive and accessible to all users
- Spatial – attribute not linked

Therefore:
An information database on the environment components / sectors / factors in the form of statistics, text, tables and interactive maps is required to be compiled at one place and represented

Hence development of an Environment Data and Information System

Government of India Initiatives

- Environmental Information System (ENVIS)
- State of Environment (SoE) Reporting
- Interactive State of Environment (SoE) Atlas of India

Initiatives

- Environmental Information System (ENVIS)
- State of Environment Reporting
- Interactive State of Environment Atlas of India

ENVIS – Need and Purpose

- Realizing the importance of Environmental Information, the Government of India, established an Environmental Information System (ENVIS) as a plan programme.
- Focus of ENVIS - providing environmental information to decision makers, policy planners, scientists and engineers, research workers, etc.
- ENVIS is a decentralized system with a network of distributed subject oriented Centers
- Ensuring integration of national efforts in environmental information collection, collation, storage, retrieval and dissemination to all concerned

ENVIS – Goal

- to build up a repository and dissemination centre in Environmental Science and Engineering;
- to gear up the modern technologies of acquisition, processing, storage, retrieval and dissemination of information of environmental nature; and
- to support and promote research, development and innovation in environmental information technology.
ENVIS – themes covered

- Environmental Management
- Air Pollution, Water Pollution, Noise Pollution
- Ecology and Ecosystem
- Nature and Natural Resources Conservation
- Health and Toxicology
- Wastes
- Forestry
- Wildlife
- Energy Management
- Environment Education
- State of Environment

MoEF – Focal Point

- Role- overall coordination of ENVIS network;
  - Identification of ENVIS Centres in specialised areas, their location in selected institutes/organisations and their linkage with the Focal Point;
  - Framing guidelines and uniform designing procedures for ENVIS Centres;
  - Identification of data gaps and knowledge gaps in specified subject areas and action to fill these gaps;
  - Liaison with relevant International Information Systems and other national information systems;
  - Monitoring and reviewing of ENVIS

ENVIS Centres - Thematic Nodes

- Role- develop environmental database and information systems
  - Building up a good collection of books, reports and journals in the particular subject area of environment;
  - Establishment of linkages with all information sources in the particular subject area of environment;
  - Establishment of a data bank on some selected parameters relating to the subject area;
  - Coordination with the Focal Point for supplying relevant, adequate and timely information to the users;
  - Helping the Focal Point in gradually up an inventory of information material available at the Centre; identification of information gaps in the specified subject areas and action to fill these gaps;

Initiatives

- Environmental Information System (ENVIS)
- State of Environment Reporting
- Interactive State of Environment (SoE) Atlas of India

Background

- MoEF’s scheme during the 10th and 11th FY Plan for assisting the State Governments / UTs to bring out SoE reports on a regular basis.
- The project aimed to design and operationalise a participatory and scientifically rigorous SoE Reporting system in India that enables informed policy/strategy formulation, decision making and follow-up action.
- State Host Institution (SHI) in consultation with National Host Institution (NHI) to plan the activities for each FY and execute the same

SoE Reporting - Purpose

- To present an overview of the environmental situation in space and time
- To create awareness and ownership of issues among stakeholders
- To enable policy and strategy formulation
- To facilitate analytical and informed decision-making
**OPERATIONAL FRAMEWORK**

- Overall coordination
- Establish environmental products
- Develop information systems and website

**Ministry of Environment and Forests**

**SHI/ENVIS Nodes**

**Support Systems**

- Environmental information collection, collation, storage, retrieval and dissemination to all concerned

**Focal Point**

---

**SoE Reporting Products**

- Static
  - SoE Report
  - SoE Atlas
  - SoE Photo Catalogue
  - SoE Video

- Interactive
  - SoE Interactive CD
  - SoE Website

---

**SoE Reporting Process - Methodology**

System Design & Orientation Workshop

- Data Collection
- Data Collation
- Synthesis & Consultation
  - Gap Identification
  - Possible Response
- Field Validation & Data Gap Filling
- Draft Report
- Consultation
- Finalisation
- Verification with Experts
- Report Production

**Activities Undertaken**

- System Design
- Constitution of Core Team
- Training and Capacity Building on IEA (DPSIR)
- Data Management
- Network coordination and monitoring
- Review of SoE process through consultative process
- Dissemination of SoE products

---

**Initiatives**

- Environmental Information System (ENVIS)
- State of Environment Reporting
- **Interactive State of Environment (SoE) Atlas of India**

---

**SoE Atlas - Background**

- Initiated to utilize the strengths of Web Geographic Information System (GIS) for better understanding and dissemination of information related to various Environmental related areas.
- A web Based Environmental Information system for efficient management of spatial/non spatial information on various environmental areas through interactive maps that are capable of handling various GIS operations.
- The non-spatial data to be regularly updated
Interactive SoE Atlas – Primary Goal

- To provide user friendly internet access to mapped environmental, social and natural resource information
- To provide the information in the form of spatial (maps), non-spatial (data) and bibliographic materials in an easy to use format so that it can be shared easily and quickly amongst government agencies, international donors, the private sector and civil society

Interactive SoE Atlas - What

- Interactive environmental database for environmental reconnaissance
- Enable easy communication between sectoral agencies and various levels of decision making on environment
- An effective tool to analyze information
- Facilitate easy monitoring of the environment status and its update

Interactive SoE Atlas - Features

- An interactive website on SoE Atlas highlighting the status of the Environment with tools of interactivity
- Interactive maps on salient themes
- A dossier on SoE of India containing interactive CD on SoE Atlas
- Depicts green, blue and brown environmental issues under the Pressure – State – Impact – Response (PSIR) analytical framework
  - PSIR maps

Interactive SoE Atlas Functional Capabilities

- Pan, Zoom, Full Extent and Refresh
- Identify Features and parameters
- Query Response service
- Scale Dependent Display of Features
- Tutorial for easy navigation

Features At A Glance

- Searching for site-specific locations.
- Displaying and viewing multiple data sets.
- Conducting queries for specialized analysis.
- An effective management mechanism for environment related information.

Technology used

- Microsoft Client server technology.
- Active Server Pages, JavaScript (front end)
- IIS Server at the middle level
- Microsoft SQL Server at backend level
- Autodesk Map Guide Server
ISSUES RELATED TO DATABASE

- Availability of the data quarterly or half yearly basis
- Authentic data
- Source

Thank You
Environment Knowledge Hub

Inception and Training Workshop on Establishment of Environmental Data and Information Management System for South Asia

An Initiative through Inclusive Partnership

9 February 2012

UNEP AP

Contents of Presentation

- Background
- Technical preview
- Architecture of eKH
- Focus Area: Theme, Nexus, Cluster
- Content: Data, Information, Knowledge
- Content: Text, Database, Geospatial, Multimedia
- Functionality: PL, PSD, EI, ST, FEI
- Geographic: CA, NEA, SA, SEA, SP
- Platform: Hardware, Software
- Scalability, Integrity, Modularity
- What and what not is eKH
Technical Review

- Technical Environmental Partners
- Donors’ initiatives
- Diverse traditional Knowledge
- Vast of experience
- Range of technical capacity (Newly independent states to Leading Industrial states)

Points to look into:
1. Cutting edge technology / ICT development
2. State-of-the-arts tools
3. eGovernment initiative in the region for administrative
4. eCommerce, eLearning etc for services.

Background

Initiatives: Global

- UNEP Infoterra: The Global Environmental Information Exchange Network
- UNEP GEO Portals: Global / Regional
- UNEP.Net
- Agenda 21: Chapter 40 -> Information for decision-making
- WSSD: Reporting Requirements on Environment
Background

Initiatives: Regional/Subregional/National

- Sub-regional Environmental Management and Information Systems (SEMIS) Phase I and II, ADB/UNEP/MRC/GMS
- GreenWeb of Thailand: www.deqp.go.th
- Envis of India: www.envis.tn.nic.in

Specific Demands

- Establish a comprehensive system for collection, interpretation and dissemination of information with the support of a management information systems (MIS) and standard codes
- Compile information in such a manner that it can be used readily for decision-making
- Improve access for stakeholders
- Establish and strengthen electronic networking capabilities.
Concept

- USERS
- eKH
- PARTNERS
  - ADB, Bilateral, IUCN, UNDP, ESCAP
- Government
- Civil Society
- CAN ++
  - Center of Excellence

Scope

- Guided by: MDG 7
- Geographic: Asia and Pacific
- Content: Environment Priority and Emerging Issues
- Target Audience: Env. Community (Govt. + Civil Society)
Visualization of eKH

3 Dimensional visualization of eKH

Geographic Extends

Territorial/Political
- Central Asia Subregion (CA)
  - Countries
- North East Asia (NEA)
  - Countries
- South Asia Subregion (SA)
  - Countries
- South East Asia Subregion (SEA)
  - Countries
- South Pacific Subregion (SP)
  - Countries
Geographic Extends

- **Geographic/Ecological**
  - Watersheds
    - (e.g. Mekong basin, Yellow River Basin)
  - Mountainous ranges
    - (e.g. ICIMOD MeKH for HKH, Indies)
  - Deserts
    - (e.g. Gobi, Sahara)
  - Waterbody
    - Lake, Dam, inland sea (e.g. Tonle Sap, Namthum Dam)
  - Estuaries
    - (e.g. Mekong delta, Chaophara Delta)
  - Wetland
    - (e.g. Malaysia Wetland)
  - Costals
    - (e.g. South China Sea, Bay of Bangkok, IUCN Costal Database)
  - Islands
    - (e.g. Andaman Islands)

Core Themes

- **Air**
  - (Indoor air, Urban air, Ozone, ABC, Climate)

- **Biodiversity/Ecosystems**
  - (Genes, Species, Ecosystem, Biodiversity Corridor and Protected Areas)

- **Land**
  - (Arable land, Vegetated land, Land degradation, Desertification)

- **Water**
  - (Surface Water, Ground water, Marine/sea water)
Nexus

- Environment and Education
  - University Consortium for Environment and SD

- Environment and Gender
  - gender roles, responsibilities, expectations, norms, and the division of labor

- Environment and Health
  - SAR, Avian Flu, Toxification, Eutrophication

- Environment and Poverty
  - Livelihood on Environment
  - Service of Environment and Use of Public Goods

Cluster

- Chemical
  - Persistent Organic Pollutants, Mercury, Lead and Cadmium

- Energy
  - Alternative Fuel, Renewable Energy (Solar, Winds), Energy Efficiency

- Urban
  - Urban Air Pollution, Urban Biodiversity, Urban waste, Cities and Climate Change, Cities and Coastal Areas

- Waste
  - Solid waste, Wastewater, E-Waste, Healthcare Waste, Construction and Demolition waste,
### Content types

- **Text based material**
  - Reports, Manuals, Guidelines, Written Documents etc.

- **Numerical based database material**
  - Statistics Databases, Monitoring Databases etc.

- **Geospatial based material**
  - GIS, Remote Sensing Imageries, Maps etc.

- **Multimedia based materials**
  - Audios, Videos, Graphics, Photos, Images, Presentations, Animations, Diagrams and Sketches etc.

---

### Additional Content Types

- Reports / Proceeding
- Periodicals
- Case studies
- Best practices / good practices
- Lessons Learnt
- Manuals
- Guidelines
- Policy brief
- Other textual documents

- National Statistics
- Organization source Statistics
  - UNDP, ADB, WB, WRI
- Monitoring database
- Other databases

- GIS (Raster, Vector)
- Imageries (Satellite Scenes, Aerial Photos)
- Maps (Topographic Map, Classification Map, Atlas)
- Other geospatial materials

- Photos (still images)
- Audio-Video (Movies and clips)
- Animation and presentation
- Other AV materials
Content

The eKH contents materials are:

- **Knowledge**
  (Manual/Guidelines, case studies, best/good practices)

- **Information**
  (Policy brief, policy, law, strategy, action plan, assessment report (SoE, GEO), periodicals, proceedings etc.)

- **Data**
  (Time-series datasets, geospatial data, and Indicators)

Content

The eKH contents by functionality:

- **Policy and Legislation**
  (National/Regional/Global Strategy, National Declaration, Decree, Laws, Acts, Regulation, Policy brief, Country Profiles, Conventions, Treaties, Bilateral and Multilateral Agreements)

- **Planning and Sustainable Development**
  (National/Regional Plan, Manual/Guidelines, case studies, best/good practices)

- **Emerging Issues**
  (Potential Impacts Analysis, Consequences Analysis, Concerns of different stakeholders etc.)

- **Science and Technology**
  (Time-series datasets, geospatial data, Indicators, SoER, IEA, SEA, Research finding, Monitoring outputs, Assessment reports, Periodicals, Proceedings etc.)

- **Financial/Economic Instruments**
  (Sustainable Finance initiatives, Green Tax, Green Custom, Clean Development Mechanism)
Hardware

Servers
- Sun Microsystems “SunFire V240”, (12K, rack-mounted type)
- Redundant servers with clustering (6K, rack-mounted type)
- Maximum capacity: unlimited simultaneous connections

Back-up/Archive and Security System
- Tandberg back-up system – 2 TB
- CISCO Firewall PIX 500 Series (Hardware Firewall)

Infrastructure/Internet connection
- 2 Mbps direct connection with ISP
- Alternative route through AIT campus LAN (12 Mbps - shared)

Software

Applications
- Web hosting – Apache
- Database – MySQL
- Programming – PHP
- CMS – Drupal
- IMS – MapServer
- Tools - Graph

Platform
- Sun Solaris 10 UNIX
Shareware

**Techie-binding**

- Metadata for different type of materials
- Protocols
- Formats
- Templates
- Standards

Decentralized Design

eKH is designed to meet the size and capacity of the host partner

- eKH at regional (full scale)
  - (2004 - 2008)
- eKH at partner agency (medium scale focus on the theme(s) of partner)
  - (2007 - 2009)
- eKH at National level (small scale)
  - (2009 - 2015)
Modular Approach

eKH content in modular style

- Follow the standardized metadata and databases structure for modular management
- Any of the contents could be plugged-in or plugged-out
- Expandable: i.e. addition of youth networks to the subregional programs

Distributed Network

- Geographic Servers
  - Nodes in every Subregions
  - Responsible for area specific such as SIC for CA
  - Share the workload and provide local preference

- Thematic/Cluster/Nexus
  - Nodes in partners agencies
  - Specialized partners such as MRC for water/watershed
  - Stronger expertise and long-term experience

- Functionality
  - Node in each strong partner such as IGES for policy
  - Targeting to different layer of user
Distributed Network

- IGES
  - Policy oriented, Best practices
- NIES
  - Scientific oriented, research
- ICIMOD
  - Mountain Ecosystem management, Scientific
- MRC
  - Watershed Ecosystem management, Scientific
- TERI
  - Energy management, Scientific

Parking Space

- Providing the On-line database / web hosting space for the partners and make accessible through eKH
- Parking Space for partners
  - ICIMOD’s M-eKH ..
  - IUCN Costal Ecosystem ..
Services

Other services of eKH

- Yellow Pages
  - Expert Database
  - Institution Database
  - Project Database
- Partners / Collaborator
- News / Announcement
- Events / Calendar
- Forum / Discussion board

Future services of eKH

- Off-line Helpdesk
  - Policy development
  - Project development/proposal
  - Operational/Implementation advices
- Virtual Learning Center
- User customizable Interface
Quality Flow

Planning, Decision Making, Policy Making

Usefulness

Knowledge

Wisdom

Information

Data

Time

Quantity Flow

Performance Assessment, Status, Achievement

Volume

Database

Indicator

Index

Data

Time
What Google search engine does?

- Search the data hosted on the websites
- Help to navigate quickest to the most relevant/popular sites

What Google doesn't?

- Data or Information provided by itself
- Grantee on the quality / accuracy
- Credibility / Accountability

What eKH does?

- Collect/compile the data/Information/knowledge and hosted on the websites
- Help to navigate to the right source
- Provide reliable / known information
- Official / Proven / Accurate packages

What eKH doesn’t?

- Replacing / Duplicating existing source
- Commercial purposes
eKH

How to go together?

- Used the capacity and expertise of the partners to provide the required data/information/knowledge to Environment Community

- Use Google’s technical advancement/search engine and other tools (Google Earth) to make better/more efficient way of information provision.

Value Added

- eKH would provide to visualize the locations/place of the effective area (project coverage, environmental disaster etc.) on Internet by web-based Mapping of geospatial data service

- eKH would help to make simple trend analysis and projection for the future with the linkage to the time series database (if any) on Internet by web-based graphing tools
eKH

Future

❖ EWS: Early Warning Systems (with the near-real time data sources and/or Interface for user to place plan of actions)

❖ DSS: Decision Support Systems (With the comprehensive data archive and predefined methodology)

Thank You

eKH Team
Why NEIMS?
• We are in the information age
• Every one requires more and authentic information, verifiable from the sources
• We require information for policy making, environmental monitoring and control measures
• We need more awareness, education for general public and research by academia

Linkages with International Environment Systems
Contd....
• UN Statistical Office (USO)
• Earth Watch (EW)
• Man and Biosphere Program (MAB)
• Global Resource Information Data (GRID)
• UN Division of Early Warning and Assessment (UNEP-DEWA)

Linkages with International Environment Systems
Contd....
• Group of Experts on Scientific and Marine Resources Protection (GESAMP)
• International Geosphere-Biosphere Programme (IGBP)
• Global Ocean Observation System (GOOS)
• Global Terrestrial Observation System (GTOS)
• Global Earth Observation System (GEOS)

Linkages with International Environment Systems
Contd....
• UN Indicator for Sustainable Development (DESA-ISD)
• Millennium Development Goals (MDGs)
• World Conservation Monitoring Centre (WCMC)
• United National Regional Resource Centre for Asia and Pacific (UNEP-RRC.AP)
• Asia Pacific Network for Global Change (APN)
• Global Change System for Research and Analysis (START)

Linkages with International Environment Systems
• Multilateral Environmental Agreements (MEAs)
  - Vienna Convention and Montreal Protocol on ODS
  - BASEL Convention on Hazardous Wastes Movement
  - UNFCCC
  - Convention on Biological Diversity
  - Convention on Desertification
  - Convention on Chemicals in Agriculture and Industry (PIC)
  - Convention on Persistent Organic Pollutants (POP)
  - MARPOL, CITIES, CMS, World Heritage, IMO, Global Ballast Water
Past Efforts

- Environmental Profile of Pakistan
- National Conservation Strategy (1992)
- Provincial and District Conservation Strategies (Sindh, NWFP, Balochistan, Abbottabad, Chitral)
- Forestry Sector Master Plan
- National Drainage Plan

Past Efforts

- Climate Change Impact and Adaptation Study
- National Communication to UNFCCC
- Pakistan State of Environment Report
- National Policies on Environment, Forestry, Drinking Water and Sanitation
- National Reports to the MEAs

Past Efforts

- National Compendium on Environmental Statistics, 2005
  - 235 tables on different social, economic and environmental statistics
- National Environmental Sustainable Indicators Study
  - (Core Indicators: 92, Sector Indicators: 33)
- Compilation of environmental issues and areas for collection of statistics November 2009
- 76 organizations consulted
- Revised list of Environmental Problems/Issues and possible datasets etc. circulated, covering 235 parameters
- Training Course arranged with SUPARCO, Karachi

Theory of Knowledge

- Knowledge
- Basic Knowledge
- Informational Knowledge
- Logical Knowledge
- Belief based on TRUST
- Belief based on LOGIC
- Belief based on PERSONAL PREFERENCES

DIKW Framework

Background

Two Projects under NEAP-SP (2001-2007)
Sub-programme: Environmental Policy and Governance
- National Environmental Information Management System
- Environmental Accounting System of Pakistan

NEIMS Budget: US$ 2.2 million
Time-frame: 2005-2009
Actual Date of Start up: 20 December 2006
Suspension: 2007-2008
Revived: August 2008
Tenure Extended: November 2012
Project Objectives

Contd…

- Review the current state of environmental data and related information
- Identify a minimum set of environmental indicators, indices and related datasets
- Establish an organizational and technical framework for Environmental Data Management
- Determine the functionalities and features of NEIMS

- Create a Project Plan for NEIMS including system architecture, resource identification and cost analysis
- Develop and deploy the system
- Train resources to maintain NEIMS

Major Activities of the NEIMS

- Signing of Project Document between Royal Netherlands Embassy and Country Director, UNDP
- Hiring of an expatriate consultant, Mr. Lex Brown, from the University of Griffith, Australia for the development of a Project Plan of NEIMS
- Preparation of Handbook/Template on Environmental Data and Information
- Compilation of Data and Information Received from different agencies and departments
- Coordination with reputed Software and Hardware Solution providers for the Development of Institutional & Technical Framework for NEIMS
- Engagement of Provincial Governments and other data generating and reporting agencies (Provincial Bureaus of Statistics) for additional survey for collection of primary data on different aspects of environment along with the related details, such as timeframe and cost implications

- National Environmental Sustainable Indicators Study: 2007 - 2008
- Handbook on Environmental Data and Information
- Inception Workshop on NEIMS
- Engagement of Provincial Bureaus of Statistics and other related organization
- Inventory of all environmental issues/problems and possible supporting datasets, information, statistics and indicators and forwarded to all NEIMS Partner Agencies for incorporation in their work plans and activities
- Online availability of Data compiled from different sources on NEIMS Website
- Hiring of a counter-part local consultant to assist the expatriate consultant in the development of Project Plan of NEIMS

- Floating of RFP for selection of consulting firms for the preparation of National Environmental Sustainable Indicators Study
- Hiring of staff for PMU, NEIMS at Islamabad (03 out of 15)
- Collection of data on environment from relevant organizations at Islamabad
- Hiring of National Project Manager, NEIMS (01 Nov. 2007, resigned in Feb. 2008)
- Rehiring of National Project Manager and staff completed Oct-Dec 2009

- Preparation of Data Needs and Use assessment Document for NEIMS
- Development of a framework (along with details of datasets) for collection of sector and inter-sector databases in all thematic areas
- GIS application for monitoring of Environmental changes at national level and their future modeling
- Training and Capacity Building Workshops/Courses
- Supply of Hardware and Technical Equipment to Federal and Provincial Agencies
As part of the Exit Strategy of a NEIMS Project, prepare Project Document for the continuation of an Environmental Information System in each Environmental Protection Agency/Environmental Protection Department.

Preparation of Hand Book for the preparing SOER of Pakistan using EMIS, with detailed annexes for each province/region.

Upgrading and extension of Resource Directory of organizations generating primary and secondary data on environment at the provincial and local level.

Establishment of EMIS at the provincial and local levels after careful review, analysis and system design by the relevant professionals.

Procure and deliver licensed software and IT equipments for the establishment and operations of IT equipment and networks in the provinces.

Preparation of users’ manual for the operation and maintenance of EMIS at provincial and local level.

Develop communication strategy and programme to support activities of the organizations at the provincial and local levels.

Expert group meetings for the harmonization and standardization of various attributes and concept relating to environment.

Training and capacity building of environmental data and information generating and user organizations at the provincial and local level.

Facilitate and promote establishment of linkages of EMIS with the existing MISs on water and sanitation, health, forest, environmental education, city district governments, development authorities and municipalities.

Study and exchange visits of the provincial and local government officials within the country and abroad.

Providing support to nodal and sub-nodal agencies for data generation equipment and services of GIS/RS technology with statistical information on environment and related parameters.

Exit Strategy and long-term sustainability.

Preparation and publication of NEIMS Project Completion Report.

<table>
<thead>
<tr>
<th>Year</th>
<th>Funds Utilized (US$)</th>
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<tr>
<td>2006</td>
<td>57,011</td>
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<td>2007</td>
<td>106,248</td>
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<td>2008</td>
<td>122,045</td>
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<td>2009</td>
<td>161,169</td>
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<td>2010</td>
<td>275,159</td>
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<td>2011</td>
<td>336,710</td>
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<tr>
<td>Total</td>
<td>1,058,342</td>
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</table>

Outputs and Deliverables

Static
- Statistical Data on various Thematic Areas of Environment
- Sector and Inter-Sector Reports
- Synthesis Report on the State of Environmental Data and Information
- Environmental Profiles and SOER

Dynamic
- Maps, Spatial Data using GIS/RS Technology
- Environmental Management Information System

Methodological Issues in Developing Environmental Data

- Inherent characters that do not allow measurement by enumeration
- Lack of the understanding of the complexity of the factors responsible for variance in the system attributes
- Cost constraints, limit of measures and biases on measurement which influence reliability of statistics
- Spatial temporal validations
- Temporal aggregation of statistics
Methodological Issues in Developing Environmental Data

- Lack of capacity to develop high level statistics
- Data standards
- Data definitions
- Measurement units
- Method of measurement
- Sampling standards

Some Examples

- Land Use
  - Flow of changes and not stock
  - FAO shifting cropping patterns
  - Classification (cropland, permanent pastures, forests, woodland, built up area and other land)
  - WRI (closed and open forests, rain forests and dry forests)

- Deforestation
  - Low land, hill and mountain forests (tropical rain forests, moist, dry, thorn)
  - Natural and plantation forests
  - Canopy and agriculture plantation
  - Forest by density
  - Deforestation statistics
  - Mangroves

- Soil Degradation
  - Lack of reliable and quantifiable data on soil properties
  - Land use or practices causes changes in soil quality
  - Productivity (Soil fertility, toxicity, water quality, effect on animal and human health)
  - Erosion and terrain deformation (Chemical and physical degradation)
  - Desertification (Slight, moderate and severe)

- Water Resources Availability and Use
  - Hydro- meteorological, Hydrological and Hydro-geological Data
  - Internally generated water
  - Per-capita water availability
  - Ground water withdrawal
  - Consumption by use
  - Water conservation measures

Some Examples

- Deforestation
  - Causes of Deforestation (commercial logging, shifting cultivation, weak institutions, population growth)
  - Disharmony in definitions and data (aforestation, re-forestation, re-generation)

- Soil Degradation
  - Nature, cause and degree of impairment in soil productivity
Some Examples

- Water Quality Degradation
  - Physical, chemical and biological parameters
  - Quality based water ecosystems
  - Fresh water quality ranges
- Urban Air Pollution
  - SPM, Lead, Sulphur, Elemental Carbon, Poly nuclear aromatic hydrocarbons, Pops, PCB, CO
  - Point sources vs ambient air quality
  - Modeling air quality/relationship to meteorological parameters

Some Examples

- Green House Gases (GHG)
  - Methane (CH4)
  - Nitrous Oxide (NO2)
  - Carbon Dioxide (CO2)
  - Carbon Monoxide (CO)
  - Carbon Tetrafluoride (CF4)
  - Perfluoroothane (C2F6)
  - Sulphur Hexafluoride (SF6)
  - CFCs/ODS

Some Examples

- Human Settlements
  - Housing, land use, urbanization infrastructure, energy use, transport, construction, industry, education, population growth and changes
- Bio Resources
  - Air, H2O, land, soil and fresh flora, fauna and other renewable
- Bio-geological
  - Plants, animals, micro organism, flora, fauna

Some Examples

- Biodiversity
  - Ownership
  - Extraction of economic species
  - Education and awareness
  - Major uses of wetland

Problems/Challenges

1. Fully developed operation plans of the Project
2. Lack of primary data on environment and its availability
3. Regular delivery of products as part of the communication strategy
4. Frequent turnover of the staff & their thin deployment
5. Reluctance on the part of the data owner to share and transfer the data
6. Incompatibility of the electronic formats of the data by the data generalizing and user agencies
7. Lack of incentives for data sharing & data transfer

What is Training?

- Transferring Skills and Information
- New Skills, Methods and Procedures
- Objective: Getting the Message Across
- Pre-requisites: Effective Preparation, Implementation and Evaluation
- Born Trainers: Trainers Require Training
- Success of Training: ENTHUSIAM
What is Capacity Development?

CD is a conceptual approach to development to enhance ability that will allow them to achieve measureable and sustainable results

Estt. of conditions for process of learning and adapting to change (knowledge and skills)

<table>
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<td>Structural Adjustment Programmes</td>
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<td>Capacity Development (CD)</td>
<td>1990-91</td>
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</table>

Capacity Development Approach

- Drivers of Change
  - Institutional Arrangements (creating capable inst.)
  - Leadership (building smart leadership)
  - Knowledge (increase knowledge)
  - Accountability (ensuring accountability)

Capacity 21 Approach

Supporting the development of policies, Processes, Skills knowledge they need to Perform better and contribute to the Achievement of National Development Goals

Process:
- Engage stakeholders on capacity development
- Assess capacity asserts and needs
- Formulate capacity development response
- Implement a capacity development response
- Evaluate capacity development (reaction, utilization & retention)

Capacity Measurement Framework

- Institutional Arrangements
  - Streamlined Processes
  - Clear Distribution of Role and Responsibilities
  - Merit-based Appraisal Mechanism
  - Coordination Mechanism
- Leadership
  - Clearly Formulated Vision
  - Communication Standards

- Management Tools
- Outreach Mechanism
- Knowledge
  - Reach Supply & Demand
  - Linkage Mechanism
  - Brain-gain and Retention Strategies
  - Knowledge Sharing Tools and Mechanisms
Schematic Diagram

- National Development Goals
  - National Institutions
  - Performance (Output)
    - Institutional Arrangements
    - Leadership
    - Knowledge
  - Performance (Input)
    - Availability of Resources (Human, Financial, Physical, Competencies)
  - Stability - Adaptability

Proposed Structure of the Inception and Training Workshop

- Working Group Tasks on the following areas:
  - Gaps in Generation, Compilation and Reporting of Environmental Data and Information
  - Strengths and Weaknesses of Sharing Data on Environment with various Stakeholders
  - Brain Storming Session on Exit Strategy for Long-Term Sustainability of Environmental Data System
  - Needs and Opportunities for Integration of Attributes and Geospatial (GIS/RS) Environmental Data
  - Presentation of the Recommendations of the Working Groups

Education and Training

I hated every minute of training, but I said, “Don't quit. Suffer now and live the rest of your life as a champion.”

Muhammad Ali

It was my fortune, or misfortune, to be called to the office of Chief Executive, without any previous political training.

Ulysses S. Grant

Thank You for Your Attention
## Summary of the Questionnaire of Environmental Data and Statistics

### Part 2A Environment Monitoring

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<td>PM$_{10}$</td>
<td>SO$_2$, NO$<em>x$, PM$</em>{10}$, Ozone</td>
<td>SO$_2$, NO$<em>x$, PM$</em>{10}$, Ozone</td>
<td>NO$<em>x$, PM$</em>{10}$, Ozone</td>
<td></td>
</tr>
<tr>
<td>Water Quality</td>
<td>Safe drinking water, COD, BOD</td>
<td>BOD, COB</td>
<td>Safe drinking water, Basic sanitation facilities</td>
<td>BOD, COD</td>
<td>Safe drinking water, Basic sanitation facilities</td>
<td>BOD, COD</td>
<td>All Parameters</td>
<td>BOD, COD</td>
</tr>
<tr>
<td>Land</td>
<td>Land use, Urban areas, land cover types</td>
<td>Land use, Urban areas, land cover types</td>
<td>Land use, Urban areas, land cover types</td>
<td>Land use, Land Cover types</td>
<td>Land use, Land Cover types</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Protected land areas, Number of endangered Spp.</td>
<td>Protected land areas, Protected marine areas, No. of endangered Spp., No. of invasive Spp.</td>
<td>Protected land areas, Protected marine areas, No. of endangered Spp., No. of invasive Spp.</td>
<td>Protected land areas, Protected marine areas, No. of endangered Spp., No. of invasive Spp.</td>
<td>Protected land areas, Protected marine areas, No. of endangered Spp., No. of invasive Spp.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forest</td>
<td>Total forest area, Natural forest areas</td>
<td>Total forest area</td>
<td>Total forest area, Natural forest areas</td>
<td>Total forest area, Natural forest areas</td>
<td>Total forest area, Natural forest areas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste</td>
<td>√ (not specified)</td>
<td>Total waste generation, Waste generation per capita per year</td>
<td>√ (not specified)</td>
<td>Covers all parameters</td>
<td>Total waste generation, Waste generation per capita per year</td>
<td>Total waste generation, Waste generation per capita per year</td>
<td>All Parameters</td>
<td>Total waste generation, Waste generation per capita per year</td>
</tr>
<tr>
<td>Major constraints in developing the Environment Monitoring Network</td>
<td>In your institution</td>
<td>In other institutions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>---------------------------------------------------------------</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of institutional set-up/coordination</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of financial resources</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of human resources</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of interest by the users</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of access to training material</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>&gt;300 100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of Rule &amp; Law</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lack of modern machineries &amp; equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No constraints reported</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**How is the Environment Monitoring data disseminated?**

<table>
<thead>
<tr>
<th>Dissemination Channel</th>
<th>In your institution</th>
<th>In other institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment Statistical Publications</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Internet</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>State of the Environment Report</td>
<td>√</td>
<td></td>
</tr>
<tr>
<td>Other Reporting Annual reports</td>
<td>√</td>
<td></td>
</tr>
</tbody>
</table>
## Part 2B  Environmental Statistics

<table>
<thead>
<tr>
<th>Legal framework for Environment Statistics</th>
<th>Afghanistan</th>
<th>Bangladesh</th>
<th>Bhutan</th>
<th>India</th>
<th>Maldives</th>
<th>Nepal</th>
<th>Pakistan</th>
<th>Sri Lanka</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>• Statistical Act</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Environmental Protection Act</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>There is an Ombudsman Collection of Statistics Act and no separate Environment Statistics Act</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Programme on Environment Statistics – Host institution</th>
<th>NEPA Partners</th>
<th>Yes Bangladesh Bureau of Statistics</th>
<th>No</th>
<th>Yes M/Environment &amp; Forests and its subordinate/attached offices</th>
<th>Yes</th>
<th>Yes Central Bureau of Statistics</th>
<th>Yes Statistics Division of M/Finance</th>
<th>No</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>In the Environment Statistics Programme, which subject areas are covered/supported by your institution?</th>
<th>Air</th>
<th>Water</th>
<th>Land</th>
<th>Biodiversity</th>
<th>Forest</th>
<th>Energy</th>
<th>Waste</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>• In your institution</td>
<td>06</td>
<td>04</td>
<td></td>
<td></td>
<td>03</td>
<td>02</td>
<td>20</td>
<td>02</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Number of Professional staff</th>
<th>02</th>
<th>01</th>
<th>15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Support staff</td>
<td>02</td>
<td>01</td>
<td>05</td>
</tr>
<tr>
<td>In other institutions</td>
<td>05</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Does your Institution/Agency cooperate with other Institutions/Agencies in the compilation of Environment Statistics?</td>
<td>Yes</td>
<td>Yes, Environmental Coordination all Ministries Committee</td>
<td>Yes, Bangladesh Bureau of Statistics</td>
</tr>
<tr>
<td>Is your Institution/Agency the leading agency in Environment Statistics?</td>
<td>Yes, in all areas</td>
<td>Yes (one of the leading agencies)</td>
<td>Yes</td>
</tr>
<tr>
<td>In all areas</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Only in specific areas</td>
<td>Air Quality, Water Quality, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In no areas</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In compiling Environment Statistics, has your Institution/Agency made use of the following:</td>
<td>Yes, UN</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Training material, methodological guidelines or country experiences</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Technical assistance from international organizations or countries</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>cooperation with national and international organisations</td>
<td>years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>-------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
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</table>

- External funding

<table>
<thead>
<tr>
<th>Are there plans to continue the compilation of Environment Statistics in your Institution/Agency?</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Are there plans to expand the compilation of Environment Statistics to areas not yet compiled?</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
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</table>

<table>
<thead>
<tr>
<th>Are there plans to continue the compilation of Environment Statistics in your Institution/Agency?</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Are there plans to expand the compilation of Environment Statistics to areas not yet compiled?</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Air</th>
<th>Water</th>
<th>Land</th>
<th>Biodiversity</th>
<th>Forest</th>
<th>Waste</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>major constraints in developing the Environment Monitoring Network</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lack of institutional set-up/coordination</td>
</tr>
<tr>
<td>• Lack of financial resources</td>
</tr>
<tr>
<td>• Lack of human resources</td>
</tr>
<tr>
<td>• Lack of interest by the users</td>
</tr>
<tr>
<td>• Lack of access to training material</td>
</tr>
</tbody>
</table>

- UNDP, EKN 5 years

- Yes
- No

- Green accounting Business & biodiversity

- Hazardous waste & substance
<table>
<thead>
<tr>
<th>Availability of data</th>
<th>√</th>
<th>√</th>
<th>√</th>
<th>√</th>
<th>√</th>
<th>√</th>
<th>√</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of data</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td>Environmental Statistics is in process of gradual strengthening. Quality data in many areas has to be strengthened. Scattered data at different places need to be brought at one place</td>
<td></td>
<td></td>
<td></td>
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How are the Environment Statistics disseminated?

<table>
<thead>
<tr>
<th>Statistical Publications</th>
<th>√</th>
<th>√</th>
<th>√</th>
<th>√</th>
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</thead>
<tbody>
<tr>
<td>Internet</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>State of the Environment Report</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td>On demand</td>
<td></td>
<td>Annual reports</td>
<td></td>
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</tbody>
</table>
Inception and Training Workshop on Establishment of Environmental Data and Information Management System for South Asia
9-10 Feb 2012, Colombo

ELEMENTS OF REGIONAL DATA AND INFORMATION MANAGEMENT SYSTEM

Johannes Akiwumi, UNEP

MANDATE

Data and information vital to effective decision-making

• The South Asia SOE 2001 and National SoE Reports pointed to the lack of necessary data

• Data and information identified as key priority for environmental management by the 10th Governing Council of SACEP (2007)

1. Regional coordination and national-level activities

CONTENT

1. Regional coordination and national-level activities
2. Use of the state-of-art ICT
3. Data standardization
4. Data sharing mechanisms
5. UNEP-Live

REGIONAL COORDINATION

Spatial and temporal components of the trans-boundary environment:

1. Environmental conditions and processes (geographical, meteorological, hydrological, environmental quality)
2. Use, protection and management of environmental resources
3. Emissions, residuals and waste
4. Natural disasters and impacts
5. ……….

National-level activities

Environmental assessment needs data and indicators to support and present analyses

• remotely-sensed data land, cover maps for change detection
• Monthly Climate Anomalies (temp, rainfall..)
• Biodiversity
• Population trends, Air pollution levels in major cities, Fresh water consumption and stress, Sea-surface temperature
• Economic development, Governance
• ………..
**National-level activities - data**

<table>
<thead>
<tr>
<th>THEME</th>
<th>ISSUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land</td>
<td>Soil erosion, Desertification, Land salinization</td>
</tr>
<tr>
<td>Forests</td>
<td>Forest loss, Forest resources management, Degradation of forest quality</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Loss of species, Loss of habitat, Wildlife Trade, Over-fishing, Protected areas</td>
</tr>
<tr>
<td>Freshwater</td>
<td>Freshwater resources, Water quality</td>
</tr>
<tr>
<td>Atmosphere</td>
<td>Climate change, Stratospheric Ozone, Depletion</td>
</tr>
<tr>
<td>Coastal and Marine areas</td>
<td>Coastal &amp; Marine pollution</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>THEME</th>
<th>ISSUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disasters</td>
<td>Natural disasters, Human-induced disasters</td>
</tr>
<tr>
<td>Urban Areas</td>
<td>Urbanization, Urban air pollution, Waste management</td>
</tr>
<tr>
<td>Socio-Economic (incl. health)</td>
<td>Population and social, Economy, Consumption and Production, Transport, Agriculture and Livestock, Human Health and Well-being, Governance</td>
</tr>
</tbody>
</table>

**National-level group activities**

1. Search and collation of existing data and information
2. Quality control on data and metadata standards
3. National clearinghouse/database
4. Data dissemination
5. Public awareness and outreach

**Use of state-of-art-ICT**

- Interoperability among many catalog services
- Support multiple business models and practices for greater data sharing
- Make available “harmonized” data
- Ensure simple access to data
- Ensure stability of services
- Balance between system stability and technological development

**Data harmonization and standardization**

- Use of state-of-art ICT technologies
- Implementation of standards and protocols
- Integration of diverse data sources
Standardization & harmonization

1. Make available “harmonized” data
2. Data of high quality properly maintained
3. Integrate technology to ensure technical and organizational interoperability (cooperation and collaboration)
4. Employ standards e.g. ISO to ensure quality of work and synchronization

Harmonization: Thesaurus

Data sharing mechanism

Purpose of data sharing

1. To expedite translation of research results into knowledge, products and procedures
2. To reduce costs by avoiding expensive duplicate data collection efforts
3. To provide ready access to data that cannot be readily replicated e.g. large surveys
4. To ensure that data are accessible in perpetuity to the society
5. To reinforce open scientific inquiry, encourages diversity of analysis and opinion, promotes new research

Elements of National Data sharing

1. Use of secondary data
2. Data ownership
3. Methods of data sharing
4. Time frame for data sharing
5. Standards and metadata
6. Data sharing plans

http://gridnairobi.unep.org/CHMPortal/docs/Nairobi_Covenant_Data_Sharing_Policy.pdf
**Expected Outputs and Outcome**

1. Trained national Working Group on data collation and uploading into data management systems
2. Operational national environment portal/platform/Clearinghouse
3. Internet-enabled, interoperable portals with up-to-date relevant data and information (a one-stop data reference centre)

Outcome: Government incorporates environmental concerns into development agenda

**Sustainability strategy**

1. Commitment and ownership by national governments and focal institutions
2. Relevant and **up-to-date** data and information
3. A process with regular reviews
4. Dedicated and skilled human resources
5. Appropriate ICT infrastructure at national nodes

---

**UNEP-Live**

*Tracking the state of our environment*

**UNEP-Live Vision**

To provide an enabling platform within which UNEP can “… keep under review the world environment situation” in a timely manner.
1. Enter text to search for assessment reports.
2. Click Open to view report.

1. The searched report opens with search terms selected.
2. User selects the content of interest and copies it for insertion in the “Live” report.

1. Paste content from search into report template.

1. Perform a search.
2. Add to Map.

2. Add to Map for use in creating report.

1. Paste map into report template.
PART I: Investing in natural capital

The Green Economy Report is compiled by the UNEP's Green Economy Initiative in collaboration with economists and experts worldwide. It demonstrates that the greening of economies is not generally a drag on growth but rather a new engine of growth; that it is a net generator of decent jobs, and that it is also a vital strategy for the elimination of persistent poverty. The report sets out a clear path towards a low-carbon, nature-positive economy that is driven by shared prosperity, social equity, and environmental sustainability.
Establishment of Environmental Data and Information Management System for South Asia

Background
- 9th GC of SACEP held in 2006, identified information management as one of the 3 priority areas for the work plan for next two years
- Proposal was developed under the MoU with UNEP-ROAP
- Draft proposal was circulated among member countries for comments before finalizing
- 11th GC of SACEP held in 2008 approved the proposal

Objectives
Overall Objective is to strengthen the environmental data and information base in South Asia for improved decision making for sustainable development

Specific Objectives
1. To assist in the development and operation of National Environmental Data and Information Centres, establish a Regional Environmental Data and Information Centre and their networking in the South Asia Region;
2. To build capacity of national and sub-regional organizations on environmental data and information management applying standard formats and methodologies, who are involved and contributed to data and information reporting;
3. To harmonize the data and information reporting system at sub-regional and national level;
4. To assist in the development and maintenance of national and regional metadata, information and data holding databases;
5. To assist in the development and dissemination of environmental data and information products responding to the needs of a wide variety of user groups using national and regional networks

Project Components
- Assist in the development/strengthen and operation of National Environmental Data and Information management Centres in member countries of SACEP
- Establishment of Regional Environmental Data and information Centre and Networking of Regional Centre with the National Centres

Project Activities
- Assessment of needs and the resources available at national and regional level
- Provide assistance in the development and operation of National Environmental Data and Information management Centres in member countries of SACEP
- Organization of national coordination meetings to identify suitable host institutions for National Environmental Data and Information management Centre

- Provide training in data and information management applying standard formats and methodologies
- National Data and Information Management Training Course
- Regional Data Management Training Course
- Regional Information Management Training Course
- Preparation of national and regional training manuals on environmental data handling sharing and reporting
- Establishment of Regional Environmental Data and information Centre and Networking of Regional Centre with the National Centres
- Development of national and regional meta databases
Why we need an EDIMS?

- Vital for effective decision-making
- Assist for more transparent decision-making
- It would assist to hold those who make decisions accountable for the consequences
- Scattered information and data, lack of tools, technical expertise and resources, etc have been the issues to provide proper information or to provide policy briefs to the decision makers

At the SACEP Secretariat Level

- Assist to prepare timely policy briefs, working papers, etc. for Governing Council
- Assist to development of its programme base
- Enhance the ability work cooperatively with other organizations
- Enhance the productivity at the Secretariat
- Assist to attract more resources for project implementation
- Assist for accurate and timely reporting

At the Country Level

- Assist in decision-making
- Provide timely and accurate information
- Facilitate Greater inter-agency coordination
- Enhance the transparency in decision-making
- Share the good practices between countries
- Promote south – south cooperation between countries

THANK YOU
Project Plan

The purpose of the project plan
- Define the scope, objectives and deliverables
- Outline the timing of each deliverable identified
- Identify resources
- Establish ownership and accountability

Scope and Objectives

Scope
Overall Objective is to strengthen the environmental data and information base in South Asia for improved decision making for sustainable development

Objectives
1. To assist in the development and operation of National Environmental Data and Information Centres, establish a Regional Environmental Data and Information Centre and their networking in the South Asia Region;
2. To build capacity of national and sub-regional organizations on environmental data and information management applying standard formats and methodologies, who are involved and contribute to data and information reporting;
3. To harmonize the data and information reporting system at sub-regional and national level;
4. To assist in the development and maintenance of national and regional metadata, information and data holding databases;
5. To assist in the development and dissemination of environmental data and information products responding to the needs of a wide variety of user groups using national and regional networks.

Project Deliverables
- A comprehensive document includes a detailed assessment on national and regional level needs, users and their information needs at the local, national and regional levels.
- A strategic document on strategy and methodology applying for data harmonization including data monitoring, metadata, quality control, reporting, etc at national and regional level
- National and Regional training manuals on environmental data handling sharing and reporting
- Fully operationalized eight National Environmental Data and Information management Centres in member countries of SACEP established
- Fully operationalized Regional Environmental Data and Information Centre Networking with the National Centres at SACEP established
- Comprehensive eight national databases, each in member countries and regional database at SACEP established

Work Plan and Timing

Project administration/management
- Project Coordinating Committee
- Project Coordinating Office At SACEP
- NFPs of member countries as national coordinating agencies
- Host Institutions for national environmental data and information management centres
THANK YOU
## Work Plan and Timing

<table>
<thead>
<tr>
<th>Activity</th>
<th>Year 01</th>
<th>Year 02</th>
<th>Year 03</th>
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<td>4.1 Assessment of needs and the resources available at national and regional level</td>
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<td>National needs assessment workshops</td>
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<td>Regional level needs assessment workshop</td>
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<td>4.2. Provide assistance in the development and operation of National Environmental Data and Information management Centres in member countries of SACEP</td>
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<td>National coordination meetings to identify suitable host institutions for National Environmental Data and Information management Centre</td>
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<td>4.3. Provide training in data and information management applying standard formats and methodologies</td>
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<td>Preparation of National and Regional Training Manuals</td>
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<td>National Data and Information Management Training Course</td>
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<td>4.4. Establishment of Regional Environmental Data and information Centre and Networking of Regional Centre with the National Centres</td>
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<td>4.5. Provision of Hardware and</td>
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<td>Software Packages</td>
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<td>4.6. Provision of support for operational expenses data and information centre</td>
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<td>4.8. Data and Information Dissemination</td>
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<td>4.9. Coordinating committee meeting</td>
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Inception and Training Workshop on Establishment of Environmental Data and Information Management System for South Asia

9 – 10 February 2012
Colombo, Sri Lanka

Group 1

1. Support from SACEP
2. Time frame
3. Investments on software
4. Capacity building

Support

- Common data format – data should be common to all countries – what should be there, common indicator
- Information should be collected at national level
- Information should jell with the requirement from other commitments – everything has a cost
- Common baseline data for every country – it can be different for each country as per availability of data – what is actually we are looking from all the countries – decide on few priority areas – air and water can be given first priority

Time frame

- Put the Focal point in place for each country – 3 months
- Deciing and developing data format, indicators, soft ware – One year
- Information collection and feeding at national level – 2 yrs – India – too long – as we are starting from the existing base, one year might be sufficient.
- Some countries have to start from scratch, so might need more time
- GEO comes in every 4 yrs – the countries are at different levels of development, so some can start it quickly

Who will do the funding – mainly for soft ware
SACEP to facilitate

Data collection to be done by each country

Capacity building
Organized by SACEP and UNEP – more people – Master trainers -2-3 people from each country

Expertise is already available within the region – India and Sri Lanka

**Group 2**

- Environment is a vast subject —
  Core parameters are there, as the countries have developed their SOEs
  Core areas should be identified that should be not more than 4-5 areas- urban air quality, land, water,

- SACEP to prepare a template to share with the member countries
- Frequency of entering data – should try to link SACEP with the institutions that collect data with in the countries
  Periodicity for data collection – what should be there???? – on line with International organizations. Eg. UNEP
  the countries to follow a good common standards

- Meta data – information catalogue – e.g.
- Detailed stock taking – identify competent authorities who are collecting information and the Focal Point should be fed with that information – Most important recommendation
  Directory of information – details of competent authorities

- Go for SOE SER, EIR reports for collecting information – to gather more information
  We should focus on non-controversial information
- Capacity – SACEP and member countries
  SACEP should also assess their capacities and capabilities and strengthen it to undertake future activities
- National level data sharing policy – SACEP to assist the countries to develop such policies for the countries that are lacking such policy
  bilateral arrangements should be made within agencies for sharing of data
  Each National Government have an arrangement for obtaining data
- National data stakeholder workshop – SACEP to play a resource person role providing technical advice
- Mapping and Geo tech tools – SACEP/ UNEP to assist in obtaining these technologies
  Very expensive, but UNEP has some arrangement and could obtain them – so these should be made available to national governments and SACEP
- Capacity building – training at SACEP and member countries
Main objective – some countries does not have a national data base – Bhutan, Bangladesh
We have to develop this to get a proper reporting system – data format and software is needed for this
Focal point of National Governments to act as the clearing house – the most important aspect of this system
Capacity is need and SACEP should come forward to build the capacity

National system needed to be strengthen before coming up with the regional –if the project to be more meaningful either the national government should develop the capacity national focal points – SACEP need to help in this
Then only the regional system will

SACEP need to develop a common software for data base development

Remote sensing and GIS – UNEP should provide support
The national government have to peruse this as this has an effect on National security
Cheaper rates are available through the UN system, so these could be make available to SACEP and countires
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1. Background

The 9th Meeting of the Governing Council of SACEP held in 2005 at Thimphu, Bhutan identified Environmental Data and Information Management as one of the priority areas of the work plan for SACEP.

The 11th Meeting of the Governing Council of SACEP held in Jaipur, India in 2009 approved the proposal on Establishment of Environmental Data and Information Management System for South Asia.

UNEP was requested to support for the implementation of the proposal at the 12th Meeting of the Governing of SACEP held in Colombo, Sri Lanka in 2010.

Taking forward the above decisions, SACEP with the assistance of UNEP organized an Inception and Training Workshop on Establishment of Environmental Data and Information Management System for South Asia on 9 – 10 February 2012, in Colombo, Sri Lanka. 27 participants including two delegates from each member country of SACEP, resources persons, UNEP and SACEP participated at the workshop.

2. Proposal

SACEP Secretariat introduced the Proposal and the Draft Work Plan for implementation of the project which has the following objectives at the meeting.

Overall Objective: Strengthen the Environmental Data and Information Management System in South Asia for improved decision making on environment and sustainable development.

Specific Objectives

- Establish a Regional Environmental Data and Information Management System at the SACEP Secretariat;
- Networking existing Centers of Excellence in South Asia
- Build capacity of sub-regional and national organizations on environmental data and information management applying standard formats and methodologies, which are involved and contributed to data and information reporting;
- Assist in the development and dissemination of environmental data and information products responding to the needs of a wide variety of user groups using regional and national networks.
3. **Road Map**

The meeting agreed the following road map

1. Identify Focal Point for each member government for regular communication with SACEP Secretariat by two months

2. Establishing the Project Coordinating Committee – composition should be finalized with the consent from the member governments

3. Detailed stock taking – identify competent authorities who are collecting information and the Focal Point should be fed with that information by 6 months

4. Background document on project would be prepared by SACEP Secretariat by 3 months.

5. Capacity building at the SACEP Secretariat level as well as National Government level to be done – Continuous process, start early as possible.

6. Development of a common data format/template for member countries which will facilitate data sharing - if comfortable follow existing formats already established by two member countries

7. For the Regional Data base, information should be provided at National levels

8. Organize Review Meetings every six months