

Environmental Guidelines on Sectoral Planning
for
Town/ Taluka Municipal Administrations (TMAs)

Programme Support Unit
Sindh Devolved Social Services Programme
Finance Department
Government of Sindh

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GLOSSARY

Act means the Pakistan Environmental Protection Act, 1997

Biological Oxygen Demand (BOD) is a measurement of oxygen required by bacteria to oxidize (stabilize) the organic matter in the wastewater

Blackwater is wastewater from toilets and latrines containing faeces or body fluids and water from sinks used for food preparation or disposal of chemical or biological ingredients.

Contamination: Introduction of impurities in the environment

Disease Vectors: Insects or small mammals carrying disease-causing germs

Drain A channel or pipe along which liquid drains away; *esp.* (a) a pipe for leading away rainwater etc.; (b) an open channel made to drain an area of land; an artificial river

Ecosystem: A biological community plus the surrounding physical environment

Endangered Species: A species in danger of becoming extinct

Environment means (a) air, water and land; (b) all layers of the atmosphere; (c) all organic and inorganic matter and living organisms; (d) the ecosystem and ecological relationships; (e) buildings, structures, roads, facilities and works; (f) all social and economic conditions affecting community life; and (g) the inter-relationships between any of the factors in sub-clause (a) to (f).

Environmental Assessment is a technique and a process by which information about the environmental effects of a project is collected, both by the developer and from other sources, and taken into account by the planning authority in forming their judgments on whether the development should go ahead.

Greywater is the water that has been used once in a house or building for washing clothes, shower, bathing, hand washing or dishwashing and can therefore be used again in toilets or to water gardens and landscaping.

Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitability, corrosiveness, toxicity or reactivity.

Impact on Environment means any effect on land, water, air or any other component of the environment, as well as on wildlife harvesting, and includes any effect on the social and cultural environment or on heritage resources.

Infiltration: Seepage of water into ground

Mitigation Measure means a measure for the control, reduction or elimination of an adverse impact of a development on the environment, including a restorative measure.

Non-hazardous: Exhibiting none of the characteristics of hazardous substances, i.e., ignitability, corrosiveness, toxicity, or reactivity.

Nontoxic: Neither immediately poisonous to humans nor poisonous after a long period of exposure.

Pathogens: The micro-organisms that are capable of producing disease

Potable water is water that is safe for drinking and cooking

Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product for reuse by others.

Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of using the altered form. Recycling does not include burning, incinerating, or thermally destroying waste. Can be conducted on-site (as in the grinding of concrete and reuse on-site).

Regulations means the Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environment Impact Assessment Regulations, 2000

Reuse: To reuse a construction waste material without altering its form on the Project site or elsewhere.

Salvage: To remove a waste material from the Project site to another site for resale or reuse by others.

Sanitation: Treatment and disposal of sewage

Sediment: Soil and other debris that has been eroded and transported by storm or well production runoff water.

Sedimentation: Deposition of material in the form of sediment, as a geological process, or in a liquid in a tank, centrifuge, etc

Septic Tank: A tank (associated either with a sewage works or with a residence not connected to a sewer) in which the solid content of sewage is allowed to settle and accumulate and is purified by the action of anaerobic bacteria

Sewer: A conduit that carries away sewage or wastewater

Sludge any muddy or slimy matter or deposit; a thick suspension of fine particles or gel in a liquid, esp. one formed as waste in any of various industrial and mechanical processes

Soakway: A pit into which wastewater flows in order to drain slowly out into the surrounding soil

Soil Erosion: physical removal of soil, either by wind or by running water

Stabilization Ponds: Shallow ponds or lagoons constructed to treat domestic wastewater

Standpipe: A vertical pipe for the conveyance of water, gas, etc., to a higher level

Suspended Solids (SS): Organic and inorganic particles, which do not dissolve in the wastewater but remain suspended

Toxic: Poisonous to humans either immediately or after a period of exposure.

Trash: Any product or material unable to be reused returned, recycled or salvaged.

Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable, and reusable material.

INTRODUCTION

Environmental issues in water and sanitation sector have been a source of concern for governments, NGOs, development organizations. Supply of clean water, provision of an adequate sewerage and drainage system, and maintaining proper sanitation conditions with proper disposal of solid waste have direct impact on people's health.

The selection of an appropriate technical system for water supply entails a careful process based on technical, environmental, health, social, institutional, financial and economic considerations. Support to water supply services in an urban centre always requires a thorough exploration of the existing situation. In relation to technical and environmental issues, this calls for an inventory of existing sources, technical systems and the environmental impacts.

The selection of an appropriate technical system for wastewater entails a careful process based on technical, environmental, health, social, institutional, financial and economic considerations.

Solid Waste Management schemes too have concern for the environment and health. The selection of an appropriate disposal site and sound collection and transportation practices for solid waste collection and disposal are based on technical, environmental, health, social, institutional, financial and economic considerations. Support to solid waste management services in an urban centre always requires a thorough exploration of the existing situation. In relation to technical and environmental issues, this calls for an inventory of existing sources, technical systems and the environmental impacts.

These Environmental Guidelines on Sectoral Planning in Water and Sanitation Sector have been set in three parts, each dealing with one of the WSS subsectors, viz. water supply, sewerage and drainage, and sanitation and solid waste management.

1.1 How to use these Guidelines

The project proponent (the local government, municipal government, city government) is obliged to use these guidelines. The project proponent has to fill in an environmental impact assessment form. The following steps are to be

o 1: Provide information on project [use **Section I**]

o 2: Describe the physical, biological and social environment [use **Section II**]

o 3: Assess potential impacts and applicable mitigation measures [use **Section III**]

o 4: Provide undertaking to the EPA on mitigation measures and compliance [use **Section IV**]

Completed form along with the form for Environmental Screening is to be submitted to the Sindh Environmental Protection Agency for evaluation. Sindh EPA may request for additional information or decide to undertake visit to the proposed project site in order to assess the environmental impact of the proposed project.

1.2 Scope of the Guidelines

These guidelines are applicable to:

A. Small to medium size water supply projects. It includes the following type of projects:

- Natural water supply projects
- Water distribution systems

B. Sanitation projects costing less than Rupees ten million. It includes the following type of projects:

- Septic tank and leach field systems
- Sewers and sewage systems

C. Solid Waste Management projects including following type of projects:

- Solid Waste Collection
- Solid Waste Transportation
- Final Disposal Site (Landfill sites)

ENVIRONMENTAL ASSESSMENT CHECKLIST FOR WATER SUPPLY SCHEMES

Section I:

Project Description

No. _____ (To be filled by EPA)

General Information

Project Name or Title _____

Project Proponent (Department or Organization) _____

Address _____

Telephone _____

Fax _____

E-mail _____

Representative of the Proponent _____

Designation _____

Name of the person who conducted this assessment _____

Designation _____

Qualification _____

Project Information

Project Location _____

Cost of the Project _____

Period of construction (start and end dates) _____

Proposed Activity

Number and type of major construction equipment that will be used _____

The total construction material (cement, pipes, bricks, gravel sand, steel, etc.) that will be utilized?

Will any new land be acquired? _____

ent ownership of land _____

at is the present use of the land? _____

v the land will be acquired (Through Land Acquisition Act or direct purchase)?

en the compensation will be paid? _____

In case of state land, are there any squatter settlements on the land? _____

es, please specify

number of settlements _____

l any compensation be paid? _____

en the compensation will be paid? _____

Is construction work during the night planned? _____

How many trees are likely to be removed? _____

Water supply type _____

Number of households that will be served _____

Brief Project Description _____

use attach a map of the proposed scheme

Type, diameter and length of pipe-work _____

Source of water _____

Distance of water source from community _____

Supply capacity of water source (m³/day) _____

Design capacity of the water supply scheme (m³/day) _____

Section II:

Environmental Profile

Are there any site of cultural importance (graveyard, shrine, mosque, archaeological site) within 100 m of the proposed scheme?

Yes No

If yes, please describe? _____

How many sensitive receptors (schools, colleges, hospitals, and clinics) are within 100 m of the proposed scheme?

If yes, please describe? _____

Are there signs of soil erosion or landslide anywhere in the project area?

Yes No

If yes, please describe (where, nature)? _____

Are there any surface water body (river, canal, stream, lake, wetland, etc) within 250 m of the proposed scheme?

Yes No

If yes, describe each water body:

Name (including type, i.e., river, canal or stream)

Dimensions Status and Uses (Is it polluted? Is domestic or other wastewater discharged to it? What are its uses, e.g., agriculture, culture, domestic, industrial, washing, fishery)

Are there any groundwater well within 500 m of the proposed scheme?

Yes No

es, describe each well:

e (Dug well, tube well, hand pump)

tion (Village and distance from the scheme)

h and Yield Uses (Drinking, agriculture, domestic, industrial, washing, livestock)

What are the present sources of potable water? _____

How is the wastewater presently disposed? _____

Are water-borne diseases common in the area?

Yes No

How are the general hygienic conditions of the project area?

Generally clean

air

oor

Is there any bad odour in the project area?

Yes No

What is the source of the odour? _____

What is the total population of the area? _____

What are the main sources of income of the community? _____

What is the average household size? _____

What proportion of the houses in the area are *pukka*, *semi-pukka*, and

cha? _____

What is the literacy rate in the area? _____

Screening Questions	Yes	No	Remarks
Damage to sensitive eco-system			
Erosion and Sedimentation			
Interference in natural flow of rain water runoff			
Creation of stagnant water pools			
Water contamination			
Water supply exhaustion			
Change in ground water flow			
Water intrusion			
Water contamination			

Section IV:

Undertaking

- The information on the proposed project and the environment provided in Forms I, II and III are correct to the best of my knowledge.
- I fully understand and accept the conditions contained in these Guidelines.
- I undertake to design, construct and operate the project strictly in accordance with the project described in Section - I, submitted with this undertaking.
- I undertake to implement all mitigation measures and undertake monitoring stated in Form IV, submitted with this undertaking.

Signature _____

Name _____

Designation _____

(With official stamp/seal)

nesses:

Signature

Name

Address

ENVIRONMENTAL ASSESSMENT CHECKLIST FOR SEWERAGE AND DRAINAGE SCHEMES

tion I:

Project Description

General Information

Project Name or Title _____

Project Proponent (Department or Organization) _____

Address _____

Telephone _____

Fax _____

E-mail _____

Representative of the Proponent _____

Designation _____

Name of the person who conducted this assessment _____

Designation _____

Qualification _____

Project Information

Project Location _____

Cost of the Project _____

Period of construction (start and end dates) _____

Proposed Activity

Number and type of major construction equipment that will be used _____

The total construction material that will be utilized? _____

Will any new land be acquired? _____

If yes, please specify

total area: _____

Present ownership of land _____

What is the present use of the land? _____

How will the land be acquired (Through Land Acquisition Act or direct purchase)?

When will the compensation be paid? _____

In case of state land, are there any squatter settlements on the land? _____

If yes, please specify

Number of settlements

Is construction work during the night planned? _____

How many trees are likely to be removed? _____

Sanitation scheme type _____

Number of households that will be served _____

Brief Project Description _____

Please attach a map of the proposed scheme

Type, size, capacity and length of sewers _____

Proposed wastewater disposal _____

Section II: Environmental Profile

Are there any site of cultural importance (graveyard, shrine, mosque, archaeological site) within 100 m of the proposed scheme?

_ Yes _ No

If yes, please describe? _____

How many sensitive receptors (schools, colleges, hospitals, and clinics) are within 100 m of the proposed scheme?

Please describe? _____

Are there signs of soil erosion or landslide anywhere in the project area?

_ Yes _ No

If yes, please describe (where, nature)? _____

Are there any surface water body (river, canal, stream, lake, wetland) within 250 m of the proposed scheme?

Yes No

If yes, describe each water body:

Name (including type, i.e., river, canal or stream)

Dimensions Status and Uses (Is it polluted? Is domestic or other wastewater discharged to it? What are its uses, e.g.,

culture, domestic, industrial, washing, fishery)

Are there any groundwater well within 250 m of the proposed scheme?

Yes No

If yes, describe each well:

Type (Dug well, tube well, hand pump)

Location (Village and distance from the scheme)

Depth and Yield Uses (Drinking, agriculture, domestic, industrial, washing, livestock)

What are the present sources of potable water? _____

How is the wastewater presently disposed? _____

Are water-borne diseases common in the area?

Yes No

How are the general hygienic conditions of the project area?

Generally clean

Air

Water

Is there any bad odour in the project area?

Yes No

What is the source of the odour? _____

What is the total population of the area? _____

What are the main sources of income of the community?

What is the average household size? _____

What proportions of the houses in the area are *pukka*, *semi-pukka* or kutchra?

Section III: **Impact Assessment**

Screening Questions	Yes	No	Remarks
erosion and Sedimentation			
alteration in natural flow of rainwater runoff			
creation of stagnant water pools			
increase in transmission of vector borne diseases			
ground water contamination			
surface water contamination			
damage to ecosystem			
increase in disease transmission to workers and consumers of agricultural products			
provision of feeding grounds for disease vectors			
increase in handlers and processors			

Section IV:

Undertaking

_____ (full name and address) as proponent for
_____ (name, description and location of project) do hereby solemnly affirm and
are:

- The information on the proposed project and the environment provided in Forms I, II and III are correct to the best of my knowledge.
- I fully understand and accept the conditions contained in these Guidelines.
- I undertake to design, construct and operate the project strictly in accordance with the project described in Section - I, submitted with this undertaking.
- I undertake to implement all possible mitigation measures to minimize the environmental damages in this project.

Signature _____
 Name _____
 Designation _____
 (With official stamp/seal)

Witnesses:

Signature	Name	Address
_____	_____	_____
_____	_____	_____

**ENVIRONMENTAL ASSESSMENT CHECKLIST FOR SANITATION AND SOLID
WASTE MANAGEMENT SCHEMES**

Section I:

Project Description

No _____ (To be filled by EPA)

e _____

General Information

Project Name or Title _____

Project Proponent (TMA or District Government)

Address _____

Telephone _____

Fax _____

E-mail _____

Representative of the Proponent _____

Designation _____

Name of the person who conducted this assessment

Project Information

Project Location _____

Cost of the Project _____

Period of construction (start and end dates)

Proposed Activity

Number and type of major construction/ transportation equipment that will be used

Will any new land be acquired? _____

If yes, please specify
total area: _____

Present ownership of land _____

What is the present use of the land? _____

How will the land be acquired (Through Land Acquisition Act or direct purchase)?

When will the compensation be paid? _____

In case of state land, are there any squatter settlements on the land?

If yes, please specify
Number of settlements _____

When will any compensation be paid? _____

When will the compensation be paid? _____

Is construction work during the night planned? _____

How many trees are likely to be removed?

Please attach a map of the proposed scheme

Type, size, capacity and length of
rers

Proposed wastewater disposal

Section II: **Environmental Profile**

Is there any site of cultural importance (graveyard, shrine, mosque, archaeological site) within 100 m of
proposed scheme?

Yes No

If yes, please describe?

How many sensitive receptors (schools, colleges, hospitals, and clinics) are within 100 m of the proposed
scheme?

Please describe?

Yes No

es, please describe (where, nature)?

es there any surface water body (river, canal, stream, lake, wetland) within 250 m of the proposed
eme?

Yes No

es, describe each water body:

ne (including type, i.e., river, canal or stream)

Dimensions Status and Uses (Is it polluted? Is domestic or other wastewater discharged to it? What are its uses, e.g., agriculture, domestic, industrial, washing, fishery)

Is there any groundwater well within 250 m of the proposed scheme?

Yes No

If yes, describe each well:

Type (Dug well, tube well, hand pump)

Location (Village and distance from the scheme)

Depth and Yield Uses (Drinking, agriculture, domestic, industrial, washing, livestock)

What are the present sources of potable water?

How is the wastewater presently disposed?

Are water-borne diseases common in the area?

Yes No

How are the general hygienic conditions of the project area?

Generally clean

Fair

Poor

Is there any bad odour in the project area?

Yes No

What is the source of the odour?

What is the total population of the area?

What are the main sources of income of the community?

What is the average income per household?

What is the average household size?

What proportions of the houses in the area are *pukka*, *semi-pukka* and *kutchha*?

Section III:

Impact Assessment

Project Title:

SCREENING QUESTIONS	Yes	No	Remarks
Is the project area...?			
• Densely populated			
• Heavy with development activities			
• Adjacent to or within any environmentally sensitive area			
○ Cultural Heritage site			
○ Protected Area			
○ Wetland			
○ Mangrove			
○ Estuarine			
○ Buffer zone of protected area			
○ Special area for protecting biodiversity			
○ Bay			
SCREENING QUESTIONS	Yes	No	Remarks
Potential Environmental Impacts			
of the project cause			

• Impairment of historical / cultural monuments/ areas and loss damage to these sites?			
• Degradation of aesthetic and property value loss?			
• Nuisance to neighbouring areas due to foul odour and influx of insects, rodents etc.?			
• Dislocation or involuntary relocation of people?			
• Public health hazard from odour, smoke from fire, and diseases transmitted by flies, insects, birds and rats?			
• Deterioration of water quality as a result of contamination of receiving water by leachate from land disposal systems?			
• Land use conflicts?			
• Pollution of surface and ground water from leachate coming from sanitary landfill sites or methane gas produced from the decomposition of solid wastes			
• Inadequate buffer zone around landfill site to alleviate nuisance			
SCREENING QUESTIONS	Yes	No	Remarks
• Social conflicts between construction workers from other areas and community workers			
• Road blocking and / or increased traffic during construction of the project			
• Noise and dust from construction activities			
• Temporary silt runoff due to construction			
• Hazard to public health due to inadequate management of landfill site caused by inadequate institutional and financial capabilities			

• Surface and ground water pollution from leachate and methane gas migration?			
• Loss of deep rooted vegetation (e.g. trees)			
• Deteriorating air quality from burning of garbage?			
• Public health hazard from odour, smoke from fire, and diseases transmitted by flies, rodents and birds etc.?			
• Health and safety hazard to workers from toxic gases and hazardous materials in the site?			

Section IV: **Undertaking**

_____ (full name and address) as proponent for
 _____ (name, description and location of project) do hereby solemnly affirm and
 are:

- The information on the proposed project and the environment provided in Forms I, II and III are correct to the best of my knowledge.
- I fully understand and accept the conditions contained in these Guidelines.
- I undertake to design, construct and operate the project strictly in accordance with the project described in Section - I, submitted with this undertaking.
- I undertake to implement all possible mitigation measures to minimize the environmental damages in this project.

Designation _____

(With official stamp/seal)

nesses:

Signature

Name

Address

GUIDELINES FOR FILLING PC-I FORMATS

It has been observed that the existing formats though quite comprehensive, still require some improvements. However, the fundamental issue is, that the agencies do not fill up the proforma properly in many cases. Feasibility studies are not done to provide sound in-put for PC-Is, financial statements are being given cursory attention and that there is a general lack of diligence in filling up information on social impacts.

i. It has therefore been agreed that the existing PC-Is, should continue with the following modifications:

(a) Environment Aspects: The proforma manually does not require information on environmental, impact assessment and its mitigation. A detailed sector-wise list of impacts be attached with these proforma and the agency in relevant sector, should furnish information in the PC-I on related aspects.

(b) The present coverage of the social sector benefits from projects is cursory. Towards this end, the following specific items be added/ elaborated in these documents:

- Employment to be created by gender.
 - Detailed analysis of estimation of the likely employment.
 - Detailed list of skills required for implementation of the project.
 - Efforts being made in the project for skills development.
 - Specific facilities (such as schools, roads, water, hospitals etc), which will become available to the people in the project localities.
 - Other socio-economic benefits/ disadvantages, which are likely to accrue as a result of the project.

(c) There should be a specific heading risk analysis in PC-Is. This should cover in detail and analyse risk analysis for the following parameters:

- Changes in assumptions in financial and economic analysis such as discount rates, implementation times, increase / decrease of costs etc.
 - An analysis of the risk involved in implementation period i.e. a detailed review of the project cycle and likely events, which may delay the project and means of addressing those delays.
- (d) Detailed financial statements both on cumulative and incremental basis for all projects to clearly identify the elements of subsidies / profits on commercial lines should be a part of every PC-I. The financial statements should be prepared on standard commercial formats.***
- (e) Regulation / instructions regarding submission of PC-I and supply of information should be strictly followed.***
- (f) When-ever, cost escalation is too large, the project should be reviewed with the objective to continue or abandon it.***
- (g) Exchange rate should be automatically adjusted on the basis of latest information by State Bank of Pakistan during project scrutiny.***
- (h) PC-I should include statement on involvement of beneficiaries and arrangements for cost recovery.***
- (i) A check-list has been added to PC-I/PC-II proforma to ensure their completeness.***
- (j) A specific set of calculation showing O&M expenditure as a consequence of project and its means of financing need to be given in each PC-I.***
- (k) For each project a statement showing Plan allocation and impact of the project being submitted for approval on the sectoral portfolio should be given in the PC-I, by agencies ministries concerned.***

PC-I FORM

**GOVERNMENT OF PAKISTAN
PLANNING COMMISSION**

**PROFORMA FOR DEVELOPMENT
PROJECTS**

WATER SUPPLY AND SEWERAGE

REVISED, 1995

PART 'A'

PROJECT DIGEST

1. Name of Project:

2. Authorities responsible for:

- i. Sponsoring
- ii. Execution
- iii. Operation and maintenance

3. Time required for completion of project: (in months)

4. (a) Plan Provision:

- i) If the Project is included in the current Five-Year Plan, specify actual allocation.
- ii) If not included in the current Plan, how is it now proposed to be accommodated (Inter / Intra-Sectoral adjustments in allocation or other resources may be indicated).
- iii) If the project is proposed to be financed out of block provision for a programme or PSDP / ADP, indicate in Pak-Rupees as under:

(Rs in million)

Total Block Provision	Amount already Committed	Amount proposed for this project	Balance available
-----------------------	--------------------------	----------------------------------	-------------------

(b) If project is not included the Plan, what warrants its inclusion in the Plan.

(c) A.D.P □ ..provision. Capital Revenue Total

5. Relationship of the project with the objectives of the sector: Indicate the contribution of the project, quantified if possible, to the targets in the Five Year Plan, and the names of other projects (whether sanctioned or under preparation) which would form part of an integrated programme within the sector.

Environmental Guidelines on Sectoral Planning

6. Capital Cost of Project:

(Rs. in million)

Local Cost:

Foreign Exchange Cost:

Total

7. Annual recurring expenditure after completion:

(Rs. in million).

Local

F.E.C -----

Total

8. Objectives of the project preferably in quantitative terms:

PREPARED BY (NAME AND DESIGNATION)

CHECKED BY (NAME AND DESIGNATION)

APPROVED BY (NAME AND DESIGNATION)

Dated: _____

