

QUESTIONNAIRE FOR ENVIRONMENTAL APPRAISAL
(FOR RIVER VALLEY AND HYDROELECTRIC PROJECTS)

Note 1: All information given in the form of annexures should be part of this file itself, annexure as separate.

Note 2: Please enter x in appropriate box where answer is Yes/No.

I. General Information.

A. Site Information.

B. Geographical Location.

Village/s	District/s	Tehsil/s	State/s

C. Latitude

D. Longitude

E. Elevation above Mean Sea Level

F. Total Area Proposed for the Project (in ha.)

G. Nature of Terrain

H. Technical Classification of

Soil (loam, sandy etc./aerial extent (ha)

II. Existing Land usage of the proposed project site area (in hectares)

	Main Structure	Submergence	Canal Network	Township	Resettlement	Others	Total
i) Agriculture a) Irrigated b) Unirrigated							
ii) Homestead							
iii) Forest							
iv) Grazing							
v) Fallow							
vi) Water bodies							
vii) Marshes							
viii) Others (PL. specify							
TOTAL							

III. Alternate sites considered from the environment angle.

- A. _____
- B. _____
- C. _____
- D. _____

IV. Reason for selecting the proposed site from the environment angle.

V. Details of site

A. Seismicity

- 1. Whether the proposed dam site fall in seismically active area

Yes No

If yes

- 2. What is the estimate of seismic hazard?
- 3. What models used for estimate?
 - (a) Determistic seismotectonic approach.
 - (b) Combined seismotectonic probabilistic approach
- 4. Result of prediction.

B. Landslide prone zone

- 1. Is the proposed project in the landslide prone zone.

- 2. If Yes
 - (a) Geomorphological condition
 - (b) Degree of susceptibility to mass movement.
- 3. Whether any major landslide occurred in the past?
- 4. If Yes,
 - (a) Frequency of occurrence/decade

(b) Area affected (ha)

(c) Population affected (nos.)

(C) Flood/Cyclone/Droughts

1. Is the area prone to flash flood?

Yes No

2. If Yes

(a) Frequency of occurrence/decade

(b) Area affected (ha)

(c) Population affected (nos.)

3. Is the area prone to Cyclone?

Yes No

4. If Yes

(a) Frequency of occurrence/decade

(b) Area affected (ha)

(c) Population affected (nos.)

5. Whether there is any relation between cyclone occurrence and flash floods?

Yes No

6. If yes, provide details.

7. Is the area prone to droughts.

Yes No

8. If Yes,

(a) Frequency of occurrence per decade

(b) Area affected (ha)

(c) Population affected

(D) Sites likely to be submerged.

1. Mineral bearing

S.No	Name of the Mineral	Reserves (million tonnes)	
		Indicated	Proven

2. Archaeological sites/Monuments.

S.No.	Sites/Monuments	Antiquity

3. Place of Worship

S.No.	Place	Period of Construction.

4. Agricultural Land

5. Population likely to be affected.

VI Objective of the Project

A. Irrigation (hectares)

B. Power Generation (MW)

C. Drinking water supply (cumecs).

D. Industrial water supply (cu.m./day)

E. Flood control (area to be protected, in hec)

F. Others (pl. Specify).

VII Project profile

A. Height of the dam/reservoir (in meters)

1. Above mean sea level.

2. From existing ground level.

3. From deepest foundation level.

B. Gross Storage capacity (M cum)

C. Catchment area (Sq.Km)

D. Submergence area (heacters)

E. Command area

F. No. of turbines

G. Capacity of each turbine (MW)

H. Length of the main canal (km)

1. Lined

2. Unlined

I. Length of distributaries (km)

1. Lined

2. Unlined

J. Cropping pattern

1. Existing pattern

S.No	Crop	Existing area (ha)	Productivity (tonne/hect)

2. Proposed Pattern.

S.No.	Crop	Add. Area proposed to be brought under cultivation.	Productivity	Production	Water Requirement.

K. Rationalise for adopting the projected crop patter.

L. Irrigation intensity

M. Water logging (ha)

1. Area already under water logging

2. Area expected to be under water logging After the completion of project.

3. Cropping area likely to be affected by water logging due to the project.

(a) Within the project area

(b) Outside the project area

4. Infiltration rate (cms/hour)

(At least for two locations in each of the major soil groups identified)

Major Soil Group						
Infiltration rate						

5. Saturated hydraulic conductivity for major soil groups (m/day) using in-situ auger hole/inverse auger hole method depending on depth of water table from the ground level within 2 meter or above 2 meters.

N. Sedimentation (hectare meter/sq.km/year)

1. Present rate

2. Rate expected after catchment after treatment.

3. Empirical estimates
4. Historical observation
- O. Length of river course which is likely to dry up due to impoundment (km)

P. In case of project where flow of water will be reduced due to withdrawal of water in between head race tunnel and tail race tunnel.

1. Length (metre)
2. Flow rate in river (m/sec)

VIII. Please indicate the area earmarked for each of the following (in ha)

- A. Dam Structure
- B. Penstocks Forebay/Surgeshaft
- C. Power House
- D. Township
- E. Submergence
- F. Main Canals
- G. Distributary canal
- H. Approach Road
- I. Green belt.
- J. Recreation facilities for tourist activities
- K. Botanical garden for conservation of rare and endangered of flora
- L. Others (please specify)

IX. Whether any of the following exist within 7 km. of the project site. If so, please indicate aerial distance from the periphery of submergence of the site and the name of the site.

S.No.	Name	Arial Distance (in km)
1.	National Park	
2.	Sanctuary/Tiger Reserve/Elephant Reserve	

S.No.	Name	Arial Distance (in km)
3.	Core Zone & Buffer Zone of Biosphere Reserve.	
4.	Habitat of migratory birds	
5.	Lakes/Reservoir/Dams	
6.	Stream/Rivers	
7.	Estuary/Sea	
8.	Mountains/Hills	
9.	Archaeological sites	
10.	Archaeological sites listed in notification.	
11.	Defence Installation.	
12.	Industries/Thermal Power Plants	
13.	Municipal Corporation/Municipal council/Nagarpanchayat (by whatever name it is known in the state)	
14.	Mangroves	
15.	Airports	
16.	Railway lines	
17.	National Highways	

X. Description of the vegetation (a) within project site (b) within 7 km from the periphery of project site under following headings

- A. Agricultural crops _____
- B. Commercial Crops _____
- C. Plantation _____
- D. Natural Vegetation/Forest Type _____
- E. Grass Lands _____
- F. Endangered Species _____
- G. Endemic species _____
- H. Others (please specify) _____

XI. Description of fauna within 7 km under following headings.

- A. Rare and endangered species
- B. Species which require significance
- C. Species of economic significance
- D. Species of special interest to local population or tourists
- E. Aquatic fauna of commercial/recreational value and migratory fish species along with their spawning ground.

XII. Raw Materials used during construction

S.No.	List of construction materials to be used at all stages of construction.			Source of material	Means of transportation (source to storage site) with justification.
		Peak	Average		
1.	Cement				
2.	Stone				
3.	Steel				
4.	Sand				
5.	Others (pl. Specify)				

XIII. In case of stone quarries details of site & surroundings be provided.

(seasonal-Monitored data)

A. Temperature (in Celsius)

1. Maximum _____ 2. Minimum _____ 3. Mean _____

B. Mean Rain fall (in mm) _____

C. Wind speed (km/hr.)

1. Maximum _____ 2. Minimum _____ 3. Mean _____

D. Humidity _____

E. Cloud Cover _____

F. Inversion occurrence

1. In Percentage _____ 2. Height (in m) _____

XV. Water Balance.

A. Lean season flow (cumec)

- 1. At the dam/reservoir site
- 2. At the periphery of submergence
- 3. One km downstream of dam/reservoir

B. Water required (cumec)

- 1. Power generation
- 2. Irrigation
- 3. Drinking water
- 4. Industrial water.

C. Ground water potential in command area.

Season	Availability (cum/sec)	Slope % Area (ha)	Location A	Location B
Pre-monsoon		0-0.5%		
		0-5.1%		
		1-2%		
		2-5%		
		>5%		
Post-monsoon		0-0.5%		
		0-05-1%		
		1-2%		
		2-5%		
		>5%		

D Ground water quality

(water samples may be taken 10 minutes after the starting of pumping for the tubewells in each of the soil groups.

PARAMETERS

- 1. Electrical conductivity (deci simons/meter: dS/m).
- 2. pH
- 3. Residual sodium carbonate (Millie equivalent/liter: me/l)
- 4. Heavy metals (only if industrial effluent is discharged in project area)

E Groundwater withdrawal rate/recharge rate

F Provide the average value of the following based on analysis of pumping test (at least two tests for each of identified lithological zone) data.

- 1. Transmissivity (Sq. Meter/day).

2. Storage coefficient.
3. Lithology of the testing site.

XVI Competing water use downstream. (cubic meter/sec.)

S.No	Usage	Present Consumption		Addition Proposed		Total	
		Surface	Ground	Surface	Ground	Surface	Ground
1	Irrigation						
2	Industry						
3	Drinking						
	Others (please specify)						
TOTAL							

XVII Physico Chemical analysis of Raw Water to be used at project township at intake point.

XVIII. Physico chemical analysis of treated water to be used in the project/Tranship.

XIX. Waste water Management

- A. Waste water treatment plan.
- B. Composition/characteristics of discharge before and after treatment

S.No.	Units	Composition	
		Before	After

C. Daily discharge (cum./day) from different sources.

1. Domestic
2. Other

TOTAL

D. Quantity of water recycled.

- (in %)
- (in Cu.m/day)

E. Details of recycling mechanism

F. Mode of final discharge/disposal.

S.No.	Mode	Length (in m.)	Quantity (in cu.m/day)
1	Open Channel		
2	Pipeline		
3	Other (please specify)		
TOTAL			

G. Point of final discharge.

S.No.	Final Point	Quantity discharge (in cum.)/day
1.	Agricultural land	
2.	Fallow land	
3.	Forest land	
4.	River	
5.	Lake	
6.	Estuary	
7.	Sea	
TOTAL		

H. Lean season flow rate in case of river/stream.

(cu.m./sec)

I. Downstream users of water

1. Human

2. Irrigation

3. Industry

4. Others (please specify)

TOTAL

J. Analysis of river water 100 meters upstream of discharge point and 100 meters downstream of discharge point.

XX. Solid Waste.

Quantity

A. Debris (tones)

Arising out of construction.

B. Sewage (tones)

C. What are the possibilities of recovery and Recycling of waste.

D. Possible uses of solid wastes.

E. Method of disposal of solid waste

Method

Qty. (TPM)

1. Landfill

2. Recovery

3. Downstream

XXI Noise level during construction

A. Source

B. Level at source

C. Level at project boundary (dB)

D. If the source is within forest area/sanctuaries etc.

E. Impact of noise on wildlife habitat.

F. Abatement measures.

XXII Pollution sources.

S.No.	Source	Around the periphery of submergence	At a distance of 7 km from the periphery of submergence zone	In the catchment area	Within 7km in the stretch in which the river is likely to dry up.
1.	Industry				
2.	Municipal waste/sewage				
3.	Mining				
4.	Beneficiation plants				
5.	Tail pond dams				
6.	Runs off from				
7.	Others (PL. Specify)				

XXIII. Atmospheric Emissions in case of DG sets.

A. Flue gas characteristics (SPM, SO₂, Nox, CO, in ug/cu.m).

S.No.	Gas	Characteristics (in ug/Nm ³)
1.	SPM	
2.	SO ₂	
3.	Nox	
4	CO	

XXIV. Storage (of inflammable/explosive/hazardous/toxic substances.

S.No.	No. of Storage	Height	Diameter	Physical Chemical	Consumption (in TPD)	Max. Qty. At any point of time.	Source of supply	Means of transportation

XXV. Occupational Health

- A. What are the major occupational health and safety hazards anticipated.
- B. What provision have been made/proposed to be made to conform to health/safety requirements.
- C. Details of personal protective equipment provided/to be provided to the workers.
- D. Is the area prone to disease like malaria/fileria etc.

XXVI Catchment Area.

A Total catchment area (ha)

B. Monuments in the catchment area.

1.

2.

C. Sites of cultural importance in the catchment area.

1.

2.

D. Sites of religious importance in the catchment area.

1.

2.

E. Other River valley projects in the catchment area.

1.

2.

F. Major development projects located in the catchment area.

1. Industry

2. Mining

3. Roads

4. Railways.

5. Thermal Power Plants.

6. Others (Pl. Specify)

G. Catchment area treatment plan.

S.No.	Year	Area to be treated (ha)				Outlay (Rs. Lakh)
		High erodability		Very high erodability		
		Direct	Indirect	Direct	Indirect	

XXVII. Green Belt (other than catchment area).

- A. Total area of project/township (in ha).
- B. Area already afforested (for existing projects), in ha
- C. Area proposed to be afforested (in ha).
- D. Width of green belt (minimum, in m).
1. Periphery of the reservoir.
 2. Canal bank.
 3. Township.
- E. Trees planted & proposed
1. Planted
 2. Proposed

XXVIII. Construction phase. Estimated duration of construction (in months)

- A. Number of persons to be employed for construction.
- | | Total | | From affected population. |
|------------|----------------------|----------------------|----------------------------------|
| | <input type="text"/> | | <input type="text"/> |
| 1. Peak | | <input type="text"/> | |
| 2. Average | <input type="text"/> | <input type="text"/> | <input type="text"/> |

- B. Details of site and area where migrated labourers will be temporarily settled.
- C. What provision has been made for the sewage treatment for the construction workers?
- D. How the fuel (kerosene/wood etc.) requirement of labour force will be met to avoid cutting of trees from the adjoining areas.
- E. Measures of Health care with emphasis on protection from endemic diseases.

XXIX. Human Settlement.

	Aerial distance from the periphery of the reservoir		
	Upto 2000 m from periphery of the reservoir	2000 m to 5000m from periphery of the reservoir	5000 m to 10000m from the periphery of the reservoir
Population			
Number of Houses			
Present Occupational pattern.			

XXX. Rehabilitation & Resettlement Plan.

A. Village(s) affected by the project

S.No.	Villages			Population		Occupation		Average Income per annum	
	Tribal	Mixed	Others	Tribals	Others	Tribals	Others	Tribals	Others

B. Population to be displaced

S.No.	Name of Village	Population					
		Land oustees only		Homestead oustees only		Land and Homestead only	
		Tribal	Other	Tribal	Other	Tribal	Other

C. Rehabilitation plan for oustees

D. Details of site where the people are proposed to be resettled.

E. Compensation package with full details (tribals and others, separately)

F. Agency/Authority responsible for their resettlement.

G. Whether the cost of Rehabilitation measure is included in the project cost?

Yes No

H. If not, How the expenditure on rehabilitation measure is to be met?

XXXI. Expenditure on Environmental Measures.

A. Capital cost of the project (as proposed to the funding agency/financial institutions.)

B. List of persons present along with addresses and occupation

C. Summary/details of public hearing.

S.No.	Issues raised	Recommendation of panel	Response of project proponents

LIST OF DOCUMENTS TO BE ATTACHED WITH THE QUESTIONNAIRE IN RESPECT OF RIVER VALLEY AND HYDROELECTRIC PROJECTS.

1.	Topographic map of the main project site indicating contours (1:2500 scale)	
2.	Topographic map covering 7 kms radius indicating main features, ecologically sensitive areas, area to be submerged, main canal network (in case of irrigation projects only).	
3.	Location map indicating areas for dumping of excavated material.	
4.	Comments/observations/Recommendations of Chief Wildlife Warden in case Wildlife habitat/migratory path exists within 7 Kilometres of project site.	
5.	Copy of the application submitted to the State Government for forest clearance in case of forestland is involved.	
6.	Copy of advertisement issued in report of public hearing.	
7.	Details of public hearing.	
8.	Ecological study.	
9.	Conservation plan for affected flora/fauna.	
10.	Index map of catchment area indicating year wise target (Physical & financial).	
11.	Action plan for control of water logging.	
12.	Action plan for command area development in respect of irrigation potential.	
13.	Action plan for health delivery systems.	
14.	Action plan for rehabilitation & resettlement.	
15.	Plan for restoration of quarry/burrow areas and areas for dumping.	
16.	Plan for green belt (other than catchment area)	

SCHEDULE-II
(See sub-para 1 (a) of para 2)
APPLICATION FORM

- I.** A Name and address of the project proposed:
 B. Location of the project:
 Name of the place:
 District, Tehsil:
 Latitude/Longitude:
 Nrarest Airport/Railway Station

C.

Alternate Sites examined	
Reason for selecting the proposed site	

- D. Does the site conform to stipulated land use as per local land use plans:

II. Objectives of the project:

- III.** A. Land Requirement:
 Agricultural Land:
 Forest Land and Density of vegetation:
 B.
 1. Land Use in the catchment/within 10 kms. Radius of the proposed site:
 2. Topography of the proposed area indicating gradient, aspects and altitude:
 3. Erodability classification of the proposed land:
 C. Pollution sources existing within 10 km radius and their impact on the quality of air, water and land.
 D. Distance of the nearest park/sanctuary biosphere:,
 Reserve/Monuments/heritage site/Reserve forest:
 E. Rehabilitation plan for quarries/borrow areas:
 F. Green belt plan:
 G. Compensatory afforestation plan:

IV. Water balance:

- A. Water balance at site
 B. Lean season water availability
 C. Source to be tapped with competing users (Rivers, Lake, Ground, Public supply).
 D. Water quality.
 E. Changes observed in quality and quantity of ground water in the last 15 years and present charging and extraction details:
 F.
 1. Quantum of waste water to be released with treatment details:

2. Quantum of quality of water in the receiving body before and after disposal of solid waste:
3. Quantum of waste water to be released on land and type of land:

G.

1. Details of reservoir water quality with necessary catchment treatment plan:
2. Command area development plan:

VI. Solid Wastes:

- A. Nature and quantity of solid wastes generated:
- B. Solid waste disposal method:

VII. Noise and Vibrations:

- A. Sources of noise and vibrations:
- B. Ambient noise level:
- C. Noise and vibration control measures proposed:
- D. Subsidence problem, if any, with control measures.

VIII. Power requirement indicating source of supply: Complete environmental details to be furnished Separately, if captive power unit proposed:

IX. Peak Labour force to be employed giving details of:

Endemic health problems in the area due to waste/air/soil-borne	
Health care system existing and proposed.	

X.

- A. Number of villages and population to be displaced:
- B. Rehabilitation master plan:

XI. Risk Assessment Report and Disaster Management Plan:

XII. Reports prepared as per guidelines of MOEF issued from time to time:

- A. Environmental Impact Assessment:
- B. Environmental Management Plan:
- C. Detailed feasibility report:
- D. Duly filled questionnaire:

XIII. Details of Environmental Cell:

I hereby given an undertaking hat the data and information given above are true to the best of my knowledge and belief and I am aware that any if any part of the data/information submitted is found to be false or misleading any stage, the project be rejected and the clearance given, if any, to the project is likely to be revoked at our risk and cost:

Signature of the applicant
With name and full address

Date:
Place:

Given Under the seal of
Organisation on behalf of
Whom the applicant is signing