

**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. Annexures as separate files will not be accepted.

Note2 : 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 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 (hectares)
- E. Command area (hectares )
- F. No. of turbines
- G. Capacity of each turbine (MW)
- H. Length of the main canal (Km)
  - 1. Lined
  - 2. Unlined
- I. Length of distributories (Km)
  - 1. Lined
  - 2. Unlined

J.. Cropping pattern

1. Existing pattern

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

2. Proposed pattern

S.No.	Crop	Addl. area proposed to be brought under cultivation	Productivity	Production	Water Requirement

K. Rationale for adopting the projected crop pattern

L. Irrigation intensity (%)

M. Water logging (ha)

1. Area already under water log

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

3. Cropping area likely to be affected by waterlogging 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						
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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 (cumecs)

**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	<input type="text"/>
H. Approach road	<input type="text"/>
I. Green belt	<input type="text"/>
J. Recreation facilities for tourist activities	<input type="text"/>
K. Botanical garden for conservation of rare and endangered species of flora	<input type="text"/>
L. Others (Please specify)	<input type="text"/>
Total	<input type="text"/>

**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	
3	Core Zone & Buffer Zone of Biosphere Reserve	
4	Habitat for 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 management
- 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	Quantity (tonnes /month)		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.**

**XIV. Meteorological data ( Annual Average to be obtained from IMD )**

*(Seasonal – Monitored Data)*

A. Temperature (in °C)

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\_\_\_\_\_

**XV. Water Balance.**

**A. Lean season flow (cumec)**

- 1. at the dam/reservoir site
- 2. at the periphery of submergence   
(major streams only)
- 3. one km. downstream of dam/reservoir

**B. Water required (cumec)**

- 1. Power generation
- 2. Irrigation
- 3. Drinking water
- 4. Industrial water
- 5. Others (please specify)

**C. Ground water potential in command area.**

Season	Availability yield in (kl/day)	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 : d S/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 metre/day)**

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

Total					
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**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/Transship.**

**XIX. Waste Water Management**

A. Waste water treatment plan

B. Composition/characteristics of discharge before and after treatment

Items	Units	Composition	
		Before	After

C. Daily discharge (cum./day) form 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	Others (Please specify)	
Total		

G. Point of final discharge :

S.No.	Final Point	Quantity discharged (in cu m.)/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 (tonnes)
- Arising out of construction
- B. Sewage (tonnes)
- 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	<input type="text"/>
2.	Recovery	<input type="text"/>
3.	Downstream users	<input type="text"/>

**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 7 Km 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	Run off from Ash ponds				
7	Others (Pl. specify)				

**XXIII. Atmospheric Emissions in case of DG sets**

A. Flue gas characteristics

S.No.	Gas	Characteristics (in g/Nm <sup>3</sup> )
1	SPM	
2	SO <sub>2</sub>	
3	Nox	
4	CO	

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

S. No.	Name	Number Of Storages	Height	Diameter	Physical and chemical Composition	Consumption (in TPD)	Maximum Quantity at any point of time (TPD)	Source of Supply	Means of transportation

**XXV. Occupational Health**

- A. What are the major occupational health and safety hazards anticipated
- B. What provisions 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 plant
  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 **Nos.**
- |                    |  |
|--------------------|--|
| 1. Planted         |  |
| 2. Survival Rate   |  |
| 3. Proposed        |  |
| 4. List of Species |  |

**XXVIII. Construction Phase**

- A. Estimated duration of construction (in months)

- B. Number of persons to be employed for construction
- |            | Total | From affected population | Others |
|------------|-------|--------------------------|--------|
| 1. Peak    |       |                          |        |
| 2. Average |       |                          |        |

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

**XXIX. Human Settlement**

	Aerial distance from the periphery of the reservoir		
	Upto 2000m From periphery Of the reservoir	2000m to 5000 m from periphery of the reservoir	5000m 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	Others	Tribal	Others	Tribal	Others

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- 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  
 (Rs Lakhs)
- B. Cost of environmental protection measures (Rs. lakhs)

S.No		Recurring Cost per annum	Capital Cost
1	Catchment area treatment		
2	Restoration of project site		
3	Restoration of canal site		
4	Cost of rehabilitation		
5	Health delivery system		
6	Conservation of flora & fauna		
7	Drainage		

8	Pollution Monitoring		
9	Solid Waste Management		
10	Green Belt of main project site		
11	Reclamation of borrow/Mined area		
12	Others (Pl. Specify)		
Total			

**XXXII. Public Hearing**

A. Date of Advertisement

B. Newspapers in which the advertisement appeared

C. Date of Hearing

D. Panel Present

E. List of persons present along with addresses and occupation

F. Summary/details of public hearing

S.No.	Issues raised	Recommendation of panel	Response of Project Proponents

The data and the information given in this Performa are true to the best of my knowledge and belief

**Date:**

Signature of the Applicant with full name & address.

**Place:**

Given under the seal of organisation on behalf of whom the applicant is signing.

**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), location of structures, roads etc.
2	Topographic map covering 7 Kms. Radius indicating main features, ecologically sensitive areas, area to be submerged, main canal net work (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 Kilometers of project site
5	Copy of the application submitted to the State Government for forest clearance in case of diversion 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 areas 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 areas/burrow areas and areas for dumping excavated material.
16	Plan for green belt (other than catchment area).