Format for Pre-Feasibility Studies of Mini/Micro-Hydro Project

This format is intended for pre-feasibility study of Micro/Mini-Hydro Schemes.

1. General Information

1.1 Scheme identification No.: ……

1.2 Location:

District: ……Municipality/Rural Municipality/Village Council .....
.....

Village name: …… Ward No.: ……

1.3 Date of site visit (day/month/year): From ……/……/…… to ……/……/……

1.4 Study team members:

1: Name:…… .. …. …. Contact No.:…. …. …. ..

2: Name:…….……..……Contact No.:…….….

1.5 Local People/Villagers contacted/Interviewed:

Name	Address	Occupation
1.		
2.		
3.		
4.		

1.6 Site accessibility: Name of nearest road head: .....

Road head type :..... Walking distance from nearest road head to project site:

Time taken by, Laden porter to cover the distance: ..... hours,
Un laden person: ..... hours,

2. Scheme Information

2.1 Name of river/stream: ……

2.2 Intake location: ……

Describe location identification marks (such as trees, school, etc.), if exists any:……

……

……

……

(Note: if the intake location is different than the identified during the map studies, please show the corresponding changes of the intake location in map).

2.3 Flow Measurement

*Flow measurement using the salt dilution method for at least three times to be carried out at the proposed headwork site. (Use sheet in **Annex- I** for flow measurement)*

3. Headwork

3.1 Canal profile

(Provide information based on the general observation of the proposed canal alignment. The information should include the following)

Alignment topography: ……

……

……

Landslides & slope stability: ……

……

……

……

Landslide at canal alignment:

S.N.	Chainage	length
1		
2		
3		
4		

River Crossing:

S.N.	Chainage	length
1		
2		
3		
4		
5		

Soil type along canal section: (i) Hard Rock, (ii) Soft Rock, (iii) Boulder Mixed, (iv) Clay

……

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……

……

Canal slope: ……

3.2 In case of existing canal

A. Canal Type:

(i) Earthen( ) (ii) Stone masonary in mud mortar ( )

(iii) Stone masonary in C/S Mortar ( ) (iv) Concrete ( )

B. Canal Shape:

(i) Trapezoidal ( ) (ii) Rectangular ( )

C. Canal Section:

Breadth: ..... Overall Depth: ..... Effective Depth: .....

(Mention bottom and top width in case of Trapezoidal section)

D. Total Length of Canal: .....

Mention about the condition of the canal: .....

.....

.....

.....

3.3 Settling basin and fore bay

Location (distance in meter from intake):

Settling basin: .....

Fore bay: .....

Flushing location & description (show also in map): .....

.....

.....

.....

3.4 Penstock profile

Table: Abney Level Readings

Station No	First			Alternative		
	Chainage (A)	Angle (α)	Head (A Sinα)	Chainage (A)	Angle (α)	Head (A Sinα)
Fore bay to 1						
1-2						
2-3						
3-4						
4-5						
5-6						

3.5 Power house

Topography at location: .....

Landslides & slope stability: .....

3.6 Tailrace

Length of tailrace (m):.....

4. Water use and water rights:

Current water uses – 500m at upstream and downstream (*from interview and locate approximate position of the project*):

S.N.	Description of Project	Average Water use

Conflict with water use projects U/S (if any):.....

Future Planned water use projects U/S (if any): .....

5. Distribution lines

a. Villages covered and Household to be served
(Add separate sheets if required)

Load Centre	Name of load centre	House holds	Av HH demand (kW)
L1			
L2			
L3			
L4			
L5			
Total			

1.

6. NEA Grid information

Nearest NEA grid point: …… ; Distance from site: ……. km/Kosh

7. Other Existing MHPs in Area

Location	Size (kW)	Distance (km)	Comments

Nearest major supply market for the project: ……

All weather road-head of the project site: ……

Fair weather road-head of the project site: ……

General layout of the project (Use Separate sheet in annex II)

Show (a) Bank of the river, (b) Intake, (c) Canal alignment, (d) Forebay, (e) Penstock Alignment, (f) Power house, (g) Tail race

8. Local person' remarks:

Name Signature and contact number of potential future contact person(s)

S.N.	Name	Contact Number	Signature

9. Environmental and Social Safeguard (Screening Criteria)

9.1 Is the project implemented environmentally sustainable and socially acceptable?

Yes ( ) No ( )

If No, Please describe the identified Social and Environmental Risks.

……

……

……

9.2 Does the Project Implemented has any adverse alteration to the natural Environment?

Yes ( ) No ( )

If Yes, please describe the impact of the project on Biodiversity and Ecosystem

……

……

……

9.3 Does the project Implemented has any adverse impacts on cultural heritage of any indigenous group/people Cast etc?

Yes ( ) No ( )

If Yes, please describe the exploitation of any natural resources or alteration of any physical resources which they have been using.

……

……

……

9.4 Does the project implemented ensure labour and working conditions safe and conducive?

Yes ( ) No ( )

If No, please describe the hazard of occupational or community significance.

……

……

……

9.5 Can the project implement ensuring Community Health Saftey and Security?

Yes ( ) No ( )

If No, please describe the anticipated impacts and circumstances on within the community

……

……

……

9.6 Does the project implement has adverse for Land acquisition and involuntary resettlement?

Yes ( ) No ( )

If Yes, please describe adverse social and economic impacts from land acquisition or restriction on land use

……

……

……

9.7 Does the project implemented conserve natural resource efficiency and prevent pollution ultimately contribute to GHG emission?

Yes ( ) No ( )

If No, please describe how the project is likely to produce pollutant

……

……

……

10. Project Categorization based on the potential risk and impact profile

(Please mark the project Category below based on the above impact profile)

Category A ( )
Projects with the potential to cause significant adverse social and/or environmental impacts that are diverse, irreversible or unprecedented.

Category B ( )
Projects with the potential to cause limited adverse social/or environmental impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures Category

Category ( )
Projects' that include activities with minimal or no risks of adverse social and environmental consequences

ANNEX I: Flow measurement (Salt dilution method)

Flow measurement using the salt dilution method to be carried out at the proposed headwork site. Use the following data sheet for the flow measurement with Salt Dilution method.

Water flow measurement by salt dilution method of …… ……. River

Date/Time: ……

Weather: ……
Salt used: …… Gram Water temp:……
Baseline Conductivity: …… mS (i.e. conductivity in the river before pouring salt solution)
Salt constant k = ……..

Time			5	10	15	20	25	30	35	40	45	50	55	60	Sum
Water conductivity in □	Minutes	1													
		2													
		3													
		4													
		5													
		6													
		7													
		8													
		9													
		10													
TOTAL:															

Area (A) under the curve = ...

Note that the "Area" here is the area under the graph of conductivity in $\mu\Sigma$ in the vertical axis and time in seconds in the horizontal axis excluding the baseline conductivity (i.e., conductivity measure before pouring the salt solution upstream). Hence, the units of "Area" under the graph are μS Sec.

$$Q = Mk/A$$

Note:

- *Use separate sheet if other method has been used for flow measurement.*
- Give minimum estimated flow using MIP method.

Annex II: General Layout of project

ANNEX III: Photographs

(Intake location, forebay, penstock profile, powerhouse, load centre)