



Government of Nepal
Ministry of Energy, Water Resources and Irrigation
Alternative Energy Promotion Centre
Mini Grid Energy Access Project

Format for Pre-Feasibility Study of Mini/Micro Hydro Subproject

This format is intended for Pre-Feasibility Study of Mini/Micro Hydro Subproject.

1. General Information

1.1 Subproject Identification No.:

1.2 Subproject Name:, Capacity: (kW)

1.3 Location:

..... Municipality / Rural Municipality, District

Village Name: Ward No.:

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

1.5 Study team members:

S. No.	Name	Designation	Contact No.	Signature
1				
2				
3				
4				

1.6 Interviewed / Contacted with : Local People/Villagers/ Developers

S. No.	Name	Address	Occupation
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

1.7 Site accessibility: Name of nearest road head:

Road head type: ☐ Blacktop all weather, ☐ Gravel all weather, ☐ Gravel seasonal,
☐ Earthen all weather, ☐ Earthen seasonal

Walking distance from nearest road head to project site:

Time taken by, Loaded porter to cover the distance : (km),hours,

Unloaded porter to cover the distance : (km), hours,

Air lift: ☐ Yes, ☐ No (In case no any alternate)

If Yes, Name of Airport:, distance (km)

Name of nearest road head:, distance (km)

2. **Scheme Information**

2.1 Name of source (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

☐ Salt Dilution, ☐ Current meter, ☐ ‘V’ Notch Weirs, ☐ Rectangular Weir, ☐ Others

..... LPS, Date (day/month/year): / /

Method of 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. No.	Chainage	Length	Remarks
1			
2			
3			
4			

River Crossing:

S. No.	Chainage	Length	Remarks
1			
2			
3			
4			

Soil type along canal section:

☐ Hard Rock, ☐ Soft Rock, ☐ Boulder Mixed, ☐ Clay, ☐ Others

If Others , Describe :

.....
.....
.....
.....

Canal slope:

3.2 In case of existing canal

A. Canal Type:

☐ Earthen, ☐ Stone masonry in mud mortar, ☐ Stone masonry in C/S Mortar, ☐ Concrete

B. Canal Shape:

☐ Trapezoidal, ☐ Rectangular, ☐ 'V' Shaped

C. Canal Section:

Breadth: m., Overall Depth: m., Effective Depth: m.

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

D. Total Length of Canal: m.,

Mention about the condition of the canal:

.....
.....
.....
.....

Settling basin and fore bay

Location (distance in meter from intake):

Settling basin:

Fore bay:

Flushing location & description (show also in map):

.....
.....
.....
.....

3.3 Penstock profile

Table: Abney Level Readings

Station No	First			Alternative		
	Chainage (A)	Angle (α)	Head ($A \sin \alpha$)	Chainage (A)	Angle (α)	Head ($A \sin \alpha$)
Forebay to 1						
1-2						
2-3						
3-4						
4-5						

3.4 Power house

Topography at location:

Landslides & slope stability:

3.5 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. No.	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	Households	Av HH demand (kW)
Total			

6. NEA National Grid Line Information

- A. NEA National Grid line reached in the Subproject area?

☐ Yes ☐ No

- B. If “Yes”, nearest NEA National Grid Line point:

Name of the Place:, Distance from site: km.

Existing Grid Line: ☐ 11 kV, ☐ 33 kV, ☐ Other, If any:

.....

- C. If “No”, Possibility of National Grid Line extension in the Subproject area within 3 (Three) year?

☐ Yes ☐ No

7. Other Existing M/MHPs in Area,

S. No.	Name of M/MHP	Location	Size (kW)	Distance (km)	Status / 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



(Draw hand written sketch, during site visit)

8. Local person' remarks:

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

S.N.	Name	Contact Number	Signature
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

9. Environmental and Social Safeguard (Screening Criteria)

9.1 Is the subproject to be implemented socially acceptable?

☐ Yes, ☐ No

If No, Please describe the identified Social issues.

.....

.....

.....

.....

9.2 Does the subproject to be implemented has any adverse alteration to the natural Environment?

☐ Yes, ☐ No

If Yes, please describe the potential impacts of the subproject on the natural Environment

.....

.....

.....

.....

9.3 Does the subproject lie in any of natural habitats and/ or legally protected areas?

☐ Protected Forests ☐ National parks, Wildlife Sanctuaries and Conservation Area
☐ Buffer Zone ☐ Wetland ☐ Environment Conservation Zones

9.4 Does the subproject directly and indirectly benefit Indigenous People and Vulnerable households¹?

If yes please provide the details of indigenous people and type of vulnerability

.....

.....

.....

9. 5 Does the subproject directly or indirectly affect Indigenous Peoples' traditional socio-cultural belief and practices?

☐ Yes, ☐ No

If yes please provide the details

9.6. Does the subproject have possibility to make any adverse impacts on historical, cultural and archeology sites?

☐ Yes, ☐ No

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

.....

.....

.....

.....

9.7 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.

.....

.....

.....

.....

¹ Women headed households, single women headed households, household heads with disabilities/old age, infected with chronic disease and HIV/AIDS, and Dalit households

9.8 Can the project implement ensuring Community Health Safety and Security?

☐ Yes, ☐ No

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

.....

.....

.....

.....

9.9 Type of land will be used for subproject construction.

For Powerhouse - ☐ Private Land ☐ Public land ☐ other specify.....

For Canal - ☐ Private Land ☐ Public land ☐ other specify.....

For Penstock Pipe - ☐ Private Land ☐ Public land ☐ other specify.....

9.7 Is there any possibility to displace or relocate due to construction of subproject?

☐ Yes, ☐ No

If yes provide details.....

9.8 Does the subproject make positive and negative impacts in livelihood of people in subproject area?

Please provide details.....

9.9 Does the subproject to be implemented has adverse social and economic impacts from Land acquisition and involuntary resettlement?

☐ Yes, ☐ No

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

.....

.....

.....

.....

9.10 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 - C ()

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).

Name of the Scheme:

River Name:

Location:, Ward:

Date:, Time:

Weather:

Salt used (M): gm, Water temp: °c, Base level: µS

Salt constant k =, (µS) / (milligram / litre)

Baseline Conductivity: µS (i.e. conductivity in the river before pouring salt solution)

Time (Second)			5	10	15	20	25	30	35	40	45	50	55	60	Sum
Water Conductivity in μ S	Minutes	1													
		2													
		3													
		4													
		5													
		6													
		7													
		8													
		9													
		10													
Total															

Area (A) under the curve =....., µS Sec

Note that the "Area" here is the area under the graph of conductivity in µS 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.

$$Q = Mk/A$$

$$Q = (\dots\dots\dots \times \dots\dots\dots) / (\dots\dots\dots) \text{ lps.}$$

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 Subproject

ANNEX - III:

Photographs

(Main structures: Intake location, headrace canal, desilting basin, forebay, penstock profile, powerhouse, load centre, etc.)