



Comments if other site information is different than in preliminary feasibility study:

.....  
 .....

1.4 Demographic Information:

Base year Number of households: .....

Base year population: .....

Percentage of Male and Female: .....

1.5 NEA Electrical Grid

Nearest NEA grid point: .....

Distance from site: ..... km

Plans to extend the grid in this direction in the next 5 years? Yes ( ) No ( )

(Please confirm this information from NEA district office and DDC office)

Comments, if any: .....

1.6 Micro-hydro Power Plants in Area (if it exist)

Location	Size (kW)	Distance (km)	Monthly Tariff (NRs/Watt or kWh)	Comments

1.7 Facilities

Facilities	Yes	No	Distance from proposed site	comment
Primary school				
Lower sec. school				
Higher sec. school				
Plus Two school				
Health post				
Police post				
VDC office				
Post office				
Bank				
Telephone booth				
Other				

## 2. Socio-Economic Survey:

### 2.1 Households and Population of the proposed village (Please also refer **ANNEX-I**):

S.N.	Name of Tole	Number of HH	Population		Remarks
			Male	Female	
I					
II					
III					
IV					

### 2.2 Source of household income (Please also refer **ANNEX-I**):

S.N.	Particular	Rank
I	Agricultural production	
II	Service/Jobs except remittance	
III	Income from remittances	
IV	Business/Enterprises	
V	Other	

### 2.3 Ethnicity and Social Information of beneficiaries

Example: Disadvantage group, Woman headed households, Single woman Disabled people

### 2.4 Total no of existing enterprises or businesses:

S.N.	Name of Enterprise	Type of Products being produced	Annual Capacity	Production	Source of energy being used
I					
II					
III					

2.5 After installation of mini-grid solar or solar-wind hybrid system in future, is there any possibility of entrepreneurship development? If so, please list out the potential enterprises or business.

.....  
 .....

2.6 Households willingness to pay (WTP) for upfront contribution? (Please refer **ANNEX-I**)

2.7 Households WTP for the monthly electricity tariff? (Please refer **ANNEX-I**)

2.8 Entrepreneurs willingness to pay (WTP) for upfront contribution?

2.9 Entrepreneurs WTP for the monthly electricity tariff? Average .....NRs/kWh

2.10 Enabling Environment:

Items	Excellent	Very good	Good	Fair	Poor	Comments
General Interest in solar/wind mini-grid						
Understanding of dangers of electricity						
Understanding about paying for electricity						
Understanding about tariff structure						
Understanding of need for repair fund						
Understanding about end use possibilities						

Other Comments, if any: .....

2.11 Expected Source of Capital Investment if the project is going to be viable for implementation:

Source of Fund for upfront cost (estimated)	Proposed % Share	Remarks
Subsidy		
Households Cash Contribution		
Business Cash Contribution		
VDC/DDC Cash Contribution		
NGO Cash Contribution		
Cash Contribution y Private company, project developer or any others.		

Net Present Value (NPV) of investment at.....% rate and 25 years of plant life is (with battery bank replacement two times in each 8 years).

Positive ( )                      Negative ( )

NPV value is NRs: .....

### 3. Present Situation and Electricity Demand:

3.1 Present Source of Electricity or Lighting in the village (Please refer **ANNEX-I** to fill the table):

S.N.	Types of Power supply	No of HH	No of Enterprises	No of other Institutions	Remarks
I	Solar home systems				
II	Small solar home systems				
III	Pico-hydro/Peltric set				
IV	Micro-hydro power				
V	Kerosene				
VI	Diesel Generator set				
VII	Other, please specify				

3.2 Average Household Electricity Demand (Please refer **ANNEX-I** to fill the table):

S.N.	Appliances/Equipments	Quantity (A)	Estimated Watt per Unit (B)	Total Power Watt $C = A * B$	Average daily use (Hour/day)
I	LED Lights				
II	Radio				
III	Mobile Charging				
IV	Television				
V	Computer or Laptop				
VI	Refrigerator				
VII	Others				
Total Power Demand (kW)					

3.3 School Power Demand (Please use the list or edit as required):

S.N.	Appliances/Equipments	Quantity (A)	Estimated Watt per Unit (B)	Total Power Watt $C = A * B$	Average daily use (Hour/day)
I	LED Lights				
II	Computers				
III	Mobile Charging				
IV	Television				
V	Printers				
VI	Others				
Total Power Demand (kW)					

3.4 Health Post Power Demand (Please use the list or edit as required):

S.N.	Appliances/Equipments	Quantity	Estimated	Total Power	Average daily use
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		(A)	Watt per Unit (B)	Watt C = A * B	(Hour/day)
I	LED Lights				
II	Refrigerator				
III	Mobile Charging				
IV	Sterilization unit				
V	Others				
Total Power Demand (kW)					

3.5 Industry/Enterprise Power Demand (Please use the list or edit as required):

S.N.	Appliances/Equipments	Quantity (A)	Estimated Watt per Unit (B)	Total Power Watt C = A * B	Average daily use (Hour/day)
I	Agro-processing				
II	Saw Mill				
III	Shops/hotels				
IV	Clinic and/or Veterinary				
V	Others				
Total Power Demand (kW)					

3.6 Other Public Power Demand (Please use the list or edit as required):

S.N.	Appliances/Equipments	Quantity (A)	Estimated Watt per Unit (B)	Total Power Watt C = A * B	Average daily use (Hour/day)
I	Street Lights				
II	Village information desk				
III	Security station				
IV	Communication Centre				
V	Others				
Total Power Demand (kW)					

3.7 Estimated Cumulative Electricity Demand of the proposed village

S.N.	Users	Quantity	Unit Requirement (kW)	Total Power (kW)
I	Households			
II	School			
III	Health post			
IV	Other Industry/Enterprise power			
V	Others, if any			
Total Power Demand (kW)				

**4. Assessment of Potential Renewable Energy Resources:**

4.1 Potential resources for mini-grid based power generation within the village

- A) Solar Photovoltaic (PV)
- B) Wind energy
- C) Solar-Wind Hybrid
- D) Micro/Mini Hydro
- E) Others

4.2 Solar Energy Availability:

S.N.	Parameters	Value	Remarks
I	Average number of sunshine days/year		
II	Average number of sunshine hours/day		
III	Orientation of the village (facing towards)	South East	North West
IV	Average insolation on the horizontal surface (kWh/m <sup>2</sup> /day)		
V	Average insolation on the tilted surface (kWh/m <sup>2</sup> /day)		
VI	Are there any obstacle in horizon between sunrise and sunset throughout the year (solar shading)?		

4.3 Are there any noticeable (high) Wind blowing locations in and around village?

Yes ( ) Name: \_\_\_\_\_ No ( )

4.4 Availability of 1 year wind resource data collected by any organizations in past or now?

Yes ( ) Name: \_\_\_\_\_ No ( )

If yes, please analyse data and estimate the annual energy yield (kWh) as well as average wind turbine size (kW) with the help of available annual wind speed and its frequency.

If No, Conduct the spot observation of wind speed (by using handheld Anemometer) note down the average wind speed.....m/s. Also analyse the NASA meteorology data from 10 meter to 50 meter.

4.5 Availability of land for the power generation and distribution (mini-grid system):

Land is available ( ) Land is not available ( )

4.6 Types of land : Private ( ) Public ( )

(NOTE: Commitment letter of the land owner is required for the Private land)

4.7 Exact location of PV array or Wind Turbine installation (with GPS coordinates:

.....

4.8 Possibility of power house setup nearby the power generator: .....

4.9 Powerhouse Topography at location: .....

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

.....  
.....

**5. Power Generation:**

5.1 Conduct detail engineering design/sizing of power generation system to quantify the number of solar PV modules, wind turbines, battery bank, charge regulators, inverters etc.

5.2 Energy yield calculation from the designed solar or solar/wind system and its generation cost against per kWh production.

5.3 Preparation of the bill of quantity (BoQ) of hardware components and total project cost estimation.

**6. Power Transmission and Distribution:**

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

6.1 Distribution lines: Villages covered and Households to be served through mini-grid system

6.2 Estimate number of 3-phase distribution poles, pole material type and pole design dimensions.

6.3 Estimate number of 1-phase distribution poles, pole material type and pole design dimensions.

6.4 Type of power cables and insulator selected in both 1-phase and 3-phase power distribution systems.

6.5 Total numbers of 3-phase (also type of load) and 1-phase load points.

6.6 General layout of the project (Use Separate sheet if needed)



Show (a) Solar PV Array or Wind Turbine mounting location (b) Powerhouse (c) Distribution Line (d) Household and Business clusters in the layout (with distance in meter).

**7. Surveyor's Recommendation:**

(I) Solar Mini-grid System (II) Solar/Wind Hybrid System (III) Not Recommended

To the best of our feasibility analysis the proposed site is **(a) Feasible** **(b) Not-feasible** for mini-grid electrification.

Name of Community Representative:	
Signature:	Date:
Details Address for Communication:	
Phone Number:	Mobile Number:
Name of Representative from the RSC:	
Signature:	Date:
Phone Number:	Mobile Number:
Name of Representative from the DEECCS:	
Signature:	Date:
Phone Number:	Mobile Number:

**NOTE:** Consultants are encouraged to provide additional information in addition to above asked check-list.

## ANNEX: I

### A- Individual Household Questionnaire:

1. How many family members do you have? Mention age also.

2. Education Level:

University	Plus Two	SLC	Secondary School	Primary School	Literate	Illiterate	Total

3. What is the income source?

a. Service      b. Agriculture      c. Business (type)

Annual Income                      ---                      ---                      ---

4. What is the source of light or electricity in your home?

a. Solar Home System (SHS)      b. Small SHS                      c. kerosene  
c. Pico-hydro/Peltric set              d. Micro-hydro                      e. Dry cell

5. What is the monthly expenditure in purchasing kerosene, dry cell etc?

6. Are you interested for the solar electricity for lights and other appliances?

a. Yes    b. no

7. How many lights do you need (approx. 4 Watts in each room)?

8. How much tariff can you pay for the solar electricity from mini-grid?

a. Rs 50-100              b. Rs 100-150              c. Rs 150-200              d. above Rs 200

9. Household basic electricity demand:

S.N.	Appliances	Power (Watt)	Quantity	Hours/day
1	LED Lights			
2	Radio			
3	Mobile Charging			
4	Television			
5	Computer or Laptop			
6	Refrigerator			
7	Others, if any			

### B- Focus Group Discussion and Questionnaire:

1. How do the community people contribute?      Cash ( )      Kind ( )      Others ( )

2. What would be the suitable place for solar panels, batteries and other equipments?

3. How many Health posts are available in the proposed villages?

4. How many schools are available in the proposed villages?

a. Higher Secondary School      b. Secondary School      c. lower secondary school

5. Do the schools and health posts have electricity?

b. Yes    b. no

1. After installation of the mini grid system, is there any possibility of business enterprise development? If so, mention the type of business.

2. Is the community willing to pay and able to pay 25% of the project upfront cost?

c. Yes    b. no

10. Can DDC/VDC also contribute to the upfront cost of project investment?

If yes, of what ..... % of investment or how much NRs.....?

If not, are there any funding institutions or investors to contribute the upfront cost?

11. How far is nearest NEA grid (in Km) from the proposed site? ..... Km

12. Is there possibility of NEA grid extension in next 5 years?

a. Yes    b. no