

**INFRASTRUCTURE  
SECTOR  
STUDY**

# GUIDE TO INFRASTRUCTURE SECTOR STUDY

## Volume 2 A Guide to Sectoral Studies in the CLUP Preparation

Infrastructure study seeks to respond to the major areas of concern in comprehensive land use planning namely: efficient internal and external linkages; improved and equitable access to basic social services, facilities, and economic opportunities; and to stimulate the desired physical growth and development.

The study entails the assessment of the current infrastructure facilities/utilities to determine its capacity to support the existing and future needs/demands of the locality. Decisions on infrastructure development have to consider other factors such as land use policies, costs, and the protection of ecological resources.

The broad framework for analyzing the infrastructure sector is provided by the following guideposts:

- What are the existing infrastructure utilities and facilities in the locality?
- What are their physical conditions? How well are these utilities and facilities managed and maintained?
- Are these adequate, efficient and reliable?
- How can these existing utilities and facilities affect the efficiency and effectiveness of other sectors' performance?
- Do these current utilities and facilities support the development of the locality?
- How can this sector meet the current and projected demands and requirements of the population? How can it improve the delivery of services and strengthen the local economy?

A detailed analysis of the component sub-sectors namely: **TRANSPORTATION, POWER, WATER, SANITATION, AND INFORMATION & COMMUNICATION TECHNOLOGY** shall be undertaken using the steps provided in each sub-sector.

Results of the sub-sector analysis shall be crosschecked and validated through a participatory process to come up with an integrated infrastructure sector analysis.

**STEPS:**

**I. Data Gathering and Processing**

**A. Generate the following data/ information and present in table format:**

1. *Inventory of Roads by System Classification and Type of Pavement, Year \_\_\_ (Table 79)*
2. *Inventory of Bridges by Location, by Type, Capacity and Condition, Year \_\_\_ (Table 80)*
3. *Inventory of Ancillary Road Facilities, Year \_\_\_ (Table 81)*
4. *Land Transportation Terminals by Location and Condition, Year \_\_\_ (Table 82)*
5. *Inventory of Public Land Transportation Vehicles by Type and Service Routes, Year \_\_\_ (Table 83)*
6. *Other Modes of Transport and Facilities, Year \_\_\_ (Table 84)*
7. *Road Accidents by Nature, Location and Frequency for the Past Three Years (Table 85)*
8. *Transport Related Projects, Approved/Funded for Implementation, Year \_\_\_ (Table 86)*

*The output tables are basic information from which assessment of the level of service of the transportation sector may initially proceed. Other relevant information may be gathered through a consultation process.*

**B. Determine the felt needs, aspirations and issues of the community relative to transportation services through consultations such as general assembly, focus group discussion, barangay consultations or other consultative meetings with identified stakeholders.**

Gathering of information on felt needs and aspirations of the population maybe facilitated by designing /structuring questions as follows:

1. *What issues and concerns related to transportation would you want to be addressed?*
2. *In what ways can you (as a resident/community member, stakeholder) address/ resolve these issues and concerns?*
3. *In what ways can the government address/resolve these issues and concerns?*
4. *What are your aspirations to improve the level of transportation services?*

**C. Gather additional data/information if warranted by the results of the consultations/meetings conducted.**

**II. Data Analysis**

Assess the prevailing situation of transportation services and facilities in the locality and present a narrative report in terms of the following:

1. Accessibility within the locality and with the neighboring localities by outlining the origin-destination or node/transit points within the locality and the interrelation/integration with regional road network system.
2. Existing condition of roads and bridges and determine any isolated areas or gaps in the road network system that require linkage/connection to the urban core/city/municipal proper and to other outlying areas.
3. Number of public utility vehicles servicing the LGU population and the location, type, capacity, general condition of the terminals. (Refer to Tables 82 and 83)
4. Capacity, frequency and efficiency of service of rail, sea or air transportation that are available in the locality. Describe the state/condition of these facilities. Relate the capacity and demand and discuss the contributions to the city/municipality's economic activities. (Refer to Table 84)
5. Roads affected by flooding areas and adequacy and efficiency of existing drainage and sewerage system to contain floodwaters.
6. Traffic problems (flooding, road accidents, etc.)/congestion areas within the urban core and other identified parts of the LGU.

*Information on the number and location of traffic-related accidents is useful to pinpoint areas that present travel safety hazards. The absence of ancillary road facilities also contributes to making some areas hazard prone. (Refer to Table 81 & 85).*

7. Trends in traffic volume and congestion in the Central Business District. Discuss the possible causes of congestion, and its cycle (particular times of day it occurs). Determine also if congestion is related to the capacity of roads to contain the traffic volume, among any other causes. Urban or urbanizing areas experiencing traffic problems may do well to undertake a more detailed traffic management planning.
8. Road capacity (supply) is the maximum number of vehicles per unit time such that there is uninterrupted flow of traffic. The volume is the actual number of vehicles passing through a specific road section or intersection. The ratio of volume to capacity (V/C, i.e., demand to supply) is the measure of level of service of the road or intersection. The lower the value of this ratio, the higher is the level of service or efficiency of the road or intersection.

The following table describes the traffic flow corresponding to the levels of service:

Level of Service	V/C Ratio	Traffic Flow Condition
A	0.0 - 0.20	Free Flow
B	0.21 - 0.44	Stable Flow
C	0.45 - 0.69	Stable Flow
D	0.70 - 0.84	Unstable Flow
E	0.85 - 1.00	Unstable Flow
F	1.00	Forced Flow

### III. Current and Projected Needs

Determine the current and future development needs of the transportation sub-sector in terms of the road network system and its relationship to current land uses and other socio-economic activities.

a. Adequacy of Total Road Length Against Population Served (Current Road Requirements)

- Urban Road Requirements

Current Urban Requirement	=	$\left( \begin{array}{l} \text{Urban} \\ \text{Population} \end{array} \times \begin{array}{l} \text{Std. Road} \\ \text{to Population} \\ \text{Ratio} \end{array} \right) - \text{Existing Urban Road Length}$
Example:		
Urban Population	=	29,137
Standard Road/Population Ratio	=	2.4 Km. Per 1000 Population
Existing Urban Road Length	=	28.363 Km.
Computation:		
Current Urban Road Requirement	=	$\left( 29,137 \times \frac{2.4}{1000} \right) - 28.363$
	=	69.929 - 28.363
Current Urban Road Requirement	=	41.566 kms.
<u>EXPLANATION:</u> If the given standard for urban road is to be followed, Municipality X presently needs an additional 41.5 km. of road in Poblacion area.		

- Rural Road Requirements

Current rural requirement	=	$\left( \frac{\text{Arable}^1}{\text{land area}} \times \frac{\text{Std. Road}}{\text{to area ratio}} \right)$	-	Existing rural road length
<i><sup>1</sup>Arable lands</i> refer to lands suitable for agricultural purposes, i.e. croplands, orchard, pasture, etc.				
Example:				
Arable land area	=	2,662 hectares		
Existing rural road Length	=	18.908 km.		
Standard Road-area Ratio	=	1.5 km. per 100 has.		
<i>Computation:</i>				
Current rural road Requirement	=	$\left( 2,662 \text{ has.} \times \frac{1.5 \text{ km.}}{100 \text{ has.}} \right)$	-	18.908
	=	39.93	-	18.908
Current rural road Requirement	=	21.02 kms.		

The above calculation gives a very rough estimate of required road length for a city/municipality. Determining where these roads are or shall be needed depends foremost on the projects' economic viability accompanied by social, technological and physical (engineering) aspects.

- b. The condition of existing roads and bridges may also point out needs for upgrading (widening or resurfacing), extension, completion of a route, connecting to another road, etc.
- c. Determination of Future Road Requirements:

- Projected Urban Road Requirements

Projected Urban Road Requirement	=	$\left( \frac{\text{projected population}}{\text{standard road to population ratio}} \right)$	-	$\left( \frac{\text{existing urban road length}}{\text{additional urban road requirement}} \right)$
Using the data previously given and a projected population of 30,000:				
Projected Urban Road Requirement	=	$\left( \frac{30,000}{1000 \text{ pop.}} \times \frac{2.4 \text{ km}}{1000 \text{ pop.}} \right)$	-	$\left( 28.363 + 41.566 \right)$
	=	72.0	-	69.93
Projected Urban Road Requirement	=	2.07 kms.		

- Projected Rural Road Requirements

Projected Rural Road Requirement	=	$\left( \begin{array}{cc} \text{Total area} & \text{Standard} \\ \text{intended for} & \text{Road to} \\ \text{Agriculture} & \text{Area Ratio} \end{array} \right)$	x		-	$\left( \begin{array}{cc} \text{Existing} & \text{Additional} \\ \text{rural road} & \text{current} \\ \text{length} & \text{Requirement} \end{array} \right)$
Projected Rural Road Requirement	=	$\left( \begin{array}{cc} 3000 \text{ has.} & \frac{1.5 \text{ km.}}{100 \text{ has.}} \end{array} \right)$	x		-	$\left( \begin{array}{cc} 18.908 & + & 21.02 \end{array} \right)$
		=				45.0 - 39.93
Projected Rural Road Requirement	=	5.07 kms.				

- d. Where additional roads are deemed necessary, determine where these will be located. Road network proposals should present the overall circulation system, identifying the major thoroughfares within and outside the planning area. The system should link the city/municipality with adjacent towns and major urban centers and at the same time provide mobility and access to major functional/activity areas.

*Proposals for construction of new roads and/or upgrading of existing roads should be integrated with the proposed land use. New roads and road upgrading projects should serve the identified expansion areas, specifically for residential, commercial, institutional, and industrial uses.*

- e. Determine alternative solutions to flooding, congestion, road accidents, etc. such as the provision and/or proper siting of terminals and parking areas, drainage, pedestrian crossing/lanes, cycling paths, overpass/underpass, and other applicable traffic calming signs/strategies.
- f. Plans, programs and projects for railroad, water, and air transportation networks may be coordinated with the Philippine National Railways (PNR), Philippine Ports Authority (PPA), and the Air Transportation Office (ATO).

#### IV. Sectoral Analysis Matrix

**A. Consolidate and validate the findings of the above steps with the result of the consultation/s.**

1. List the key issues, problems, and concerns of the transportation sector.
2. Determine the possible implications/impacts of the key issues, problems, and concerns.

**B. Recommend interventions such as:**

1. Realistic policy options and appropriate strategies
2. Programs and projects for implementation with due consideration of current and pipeline projects (refer to Table 86)

**C. Prioritize, tabulate and present the results in matrix form as follows:**

**(Sample) Transportation Analysis Matrix**

<i>Technical Findings/ Observations</i>	<i>Implications (Effects)</i>	<i>Recommended Interventions</i>
<ul style="list-style-type: none"> <li>• Insufficient roads</li> </ul>	<ul style="list-style-type: none"> <li>• Less productivity</li> <li>• Traffic congestion</li> <li>• Pollution</li> </ul>	<ul style="list-style-type: none"> <li>• Traffic management</li> <li>• Provision of ancillary road facilities (e.g. elevated pedestrian crossings, PUV stops, etc.)</li> <li>• Widening of major roads</li> </ul>
<ul style="list-style-type: none"> <li>• Clogged drainage ways</li> </ul>	<ul style="list-style-type: none"> <li>• Flooding</li> <li>• Water-borne diseases</li> <li>• Poor road condition</li> <li>• Traffic congestion</li> </ul>	<ul style="list-style-type: none"> <li>• Upgrading of road network and drainage system</li> <li>• Community participation in drainage maintenance</li> </ul>

**TABLES**

**Table 79. Inventory of Roads by System Classification and Type of Pavement, Year \_\_\_\_\_**

Roads By System Classification	Road Surface Type														
	Right Of Way (Row)	Total Length (Km)	Concrete			Asphalt			Gravel			Earth			
			Km	%	C	Km	%	C	Km	%	C	Km	%	C	
National															
Provincial															
City / Municipal															
Barangay Road															
Alley															
Footpath															

Source: DPWH / Provincial Municipal/ City Engineering Office.

C - Physical Condition: Good – Acceptable / Serviceable  
 Poor – Needs Improvement  
 Critical – For Priority Action

**Table 80. Inventory of Bridges by Location, Type, Capacity and Condition,, Year \_\_\_\_\_**

BRIDGE NAME	LOCATION (BARANGAY)	TYPE	*ROAD CAPACITY (TONS)	***PHYSICAL CONDITION

Source: DPWH/PEO/LGU/(MEO)

Type - Concrete, Steel, Wood, Others

C- Physical Condition: Good – Acceptable/ Serviceable  
 Poor – Needs Improvement  
 Critical – For Priority Action

**Table 81. Inventory Of Ancillary Road Facilities,  
Year \_\_\_\_\_**

Type Of Ancillary Road Facilities	Location Of Ancillary Road Facility											
	National Road			Provincial Road			City/Municipal Road			Barangay Road		
	Road Name	No.	Condition	Road Name	No.	Condition	Road Name	No.	Condition	Road Name	No.	Condition
Pedestrian Crossing												
Sidewalk												
Overpass												
Waiting Sheds												
Street Lights												
Traffic Lights												
Road Signage												
Others												

Source: DPWH Provincial / Municipal / City Engineering Office.

**Table 82. Land Transportation Terminals By Location And Condition ,  
Year \_\_\_\_\_**

Name	Barangay	Area Occupied (Hectares)	Type Of Public Utility Using The Terminal	Terminal Facilities	Physical Condition

Source : Municipal / Engineering Office.

**Table 83. Inventory of Public Land Transportation Vehicles  
by Type and Service Routes, Year \_\_\_\_\_**

Type Of Public Utility Vehicle	Registered In City / Municipality					From Other City / Municipality	
	Total No.	Route/Destination				Total No.	Route/ Destination
		Within Barangay	Barangay To Barangay	Barangay To City/Municipal/ Center	City/ Municipal/ Center		
Buses							
Jeepney							
Taxi/FX							
Tricycles							

Source: Land Transportation Office, City/Municipal Planning and Development Office.

**Table 84. Other Modes of Transport and Facilities**

Modes	Facilities	Capacity	Location	Condition	Frequency of Service/ Trips
Rail Transport					
Sea Transport					
Air Transport					

Source: LGU Engineering Dept./Phil. National Railways/ Philippine Ports Authority/Civil Aeronautics Administration/Maritime Industry Authority (MARINA)

\* Facilities May Include Passenger And Cargo Terminals Air And Seaports, Warehouse, Ticketing Office, etc.

**Table 85. Road Accidents by Nature, Location and Frequency for the Past 3 Years**

Nature	Location	Year 1	Year 2	Year 3	For the Past 3 Years
TOTAL					

Source: Municipal /City Philippine National Police Office.

**Table 86. Transport Related Projects, Approved/ Funded for Implementation, Year\_\_\_\_\_**

Name/ Location of Project	Location	Type	Proponent (Government, Private, Other)	Estimated Start Date	Estimated Date of Completion

Source: Dept. of Public Works and Highway, City / Municipal, Engineering office Concerned National Government Agency.

**POWER**

**A Guide to  
Sectoral Studies  
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**STEPS:**

**I. Data Gathering and Processing**

**A. Generate the following data/information and present in table format:**

1. *Household Served and Unserved by Electricity, Year \_\_\_ (Table 87)*
2. *Number of Connections by Type of Users and Average Consumption, Year \_\_\_ (Table 88)*

*The output tables are basic information from which assessment of the state of power utilization and services may initially proceed. Other relevant information may be gathered through a consultation process.*

**B. Determine the felt needs, aspirations and issues of the community relative to power services through general assembly, focused group discussion, barangay consultation or other consultative meetings with identified stakeholders.**

Gathering of information on felt needs and aspirations of the population maybe facilitated by designing /structuring questions as follows:

1. *What issues and concerns related to power utilities would you want to be addressed?*
2. *In what ways can you (as a resident/community member, stakeholder) address/ resolve these issues and concerns?*
3. *In what ways can the government address/resolve these issues and concerns?*
4. *What are your aspirations to improve the level of power services?*

**C. Gather additional data/information if warranted by the results of the consultations/ meetings conducted.**

## II. Data Analysis

Assess the prevailing situation of power services and facilities in the locality and present a narrative report in terms of the following:

1. Areas (barangays) and percentage of households served and unserved by electricity.

$$\begin{aligned} \% \text{ of households served} &= \frac{\text{Number of households served}}{\text{Total Number of households}} \times 100 \\ \% \text{ of households unserved} &= \frac{\text{Number of households unserved}}{\text{Total Number of households}} \times 100 \end{aligned}$$

2. Schedule of power service provision whether 24 hours a day or at certain hours only (indicate whether mornings, afternoons, or evenings). Include any incidence of recurrent or unscheduled power outages/interruptions. Relate such incidents to the capacity and efficiency of the electric power supply system.
3. Average power consumption by type of consumers.

## III. Current and Projected Needs

Determine the current and future development needs of the power sub-sector in terms of provision of electric power supply and its relationship to current land uses and other socio-economic activities.

1. Coordinate with the concerned local electric cooperatives in the conduct of the following:
  - i. Identification of the causes/duration/frequency of electric power interruptions.
  - ii. Specifying areas which would require extension, upgrading or improvement of electric power connections/lines.
2. Determine the projected power requirement of each type of use utilizing the following formula:

$$\text{Future Power Requirement} = \text{no. of projected establishment (domestic, industrial, others)} \times \text{average consumption rate/year}$$

Tabulate projected power requirements using Table 89.

3. Based on the projected demand/need for electricity by sector, determine total power requirements, and coordinate/consult the local electric cooperative to determine their projected power supply for the next 3 to 5 years.

#### IV. Sector Analysis Matrix

**A. Consolidate and validate the findings of the above steps with the result of the consultation/s.**

1. List the key issues, problems, and concerns of the transportation sector.
2. Determine the possible implications/impacts of the key issues, problems, and concerns.

**B. Recommend interventions such as:**

1. Realistic policy options and appropriate strategies
2. Programs and projects for implementation with due consideration of current and pipeline projects

**C. Prioritize, tabulate, and present the results in matrix form as follows:**

**(Sample) Power Analysis Matrix**

<i>Technical Findings/ Observations</i>	<i>Implications (Effects)</i>	<i>Recommended Interventions</i>
<ul style="list-style-type: none"> <li>• Prohibitive cost of providing power supply in remote barangays.</li> </ul>	Remote barangays remain unenergized/deprived access to modern conveniences	Introduction of new type of energy/ electricity generation technology in cooperation with concerned government agencies/organizations.
<ul style="list-style-type: none"> <li>• Lack of power supply in Brgys. X, Y, Z</li> </ul>	Low socio-economic activities e.g. investment /income opportunities, recreation, industrial development, etc.	Coordinate/negotiate with NAPOCOR/NEA/local electric cooperative for extension of service to these barangays.

**TABLES**

*Table 87. Households Served and Un-served by Electricity, Year \_\_\_\_*

	Number of Households		Percentage (%)	
	Rural	Urban	Rural	Urban
Served				
Un-served				
<b>Total</b>				

Source: Local Power Service Provider

*Table 88. Number of Connections by Type of Users and Average Consumption (KWH/Mo.)*

Type of Connection	Number of Connections	Ave. Consumption (KWH/mo.)
Domestic		
Industrial		
Commercial		
Public Bldg.		
Streetlights (Public)		
Others		
<b>Total</b>		

Source: Local Power Service Provider

*Table 89. Projected Power Requirements by Type of Connections (KWH)*

Connection/User	Projected Power Requirement				
	Y1	Y2	Y3	Y4	Y5
1. Domestic					
2. Industrial					
3. Commercial					
4. Institutional					
5. Agricultural					
6. Streetlights (Public)					
<b>Total</b>					

**STEPS:**

**I. Data Gathering and Processing**

**A. Generate the following data/information using the data gathered from different sources and present in table format:**

1. Level I Water Supply System by Type and Number of Population Served, Year \_\_\_\_ (Table 90)
2. Level II Water Supply System by Type and Number of Population Served, Year \_\_\_\_ (Table 91)
3. Level III Local Waterworks System by Type of Consumer and Average Water Consumption, Year \_\_\_\_ (Table 92)
4. Other Water Sources, Year \_\_\_\_ (Table 93)
5. Existing Surface Water Resources by Type and Classification, Year \_\_\_\_ (Table 94)

*The output tables are basic information from which assessment of the state of supply and services may initially proceed. Other relevant information may be gathered through a consultation process.*

**B. Determine the felt needs, aspirations and issues of the community relative to water utilities through consultations such as general assembly, focused group discussion, barangay consultation or other consultative meetings with identified stakeholders.**

Gathering of information on felt needs and aspirations of the population maybe facilitated by designing /structuring questions as follows:

- *What issues and concerns related to water would you want to be addressed?*
- *In what ways can you (as a resident/community member, stakeholder) address/resolve these issues and concerns?*
- *In what ways can the government address/resolve these issues and concerns?*
- *What are your aspirations to improve the level of water services?*

**C. Gather additional data/information if warranted by the results of the consultations/ meetings conducted.**

## II. Data Analysis

Describe the levels of existing water supply services, facilities, and resources in the city/municipality in terms of the following:

1. Total number of households and/or the area coverage, type, capacity, location, served by:
  - a. Level I – point sources (such as rain collector, wells and springs); generally for rural areas where houses are thinly scattered to justify a distribution system;
  - b. Level II – communal faucet systems, generally for rural areas where houses are densely clustered enough to justify a piped distribution system providing a number of households with faucets.
2. Local waterworks system (Level III) by type and number of consumers, average consumption and areas served.
3. Other water sources in terms of type, location, and volume.
4. Existing watershed areas, location, and condition.
5. Existing surface water resources in the locality. (e.g. rivers, lakes, water impounding structures and other sources of water). Indicate location and classification/utilization of water bodies (refer to *Annex 24* for classification of water bodies).

## III. Current and Projected Needs

Determine the current needs and future requirements for water supply service. The analysis should also show the existing water supply service needs of the city/municipality in terms of the following:

1. Sufficiency/insufficiency of the existing water supply for domestic, commercial, industrial, agricultural and other uses.
2. Needs for improvement of water supply, distribution system, facilities and services, rates, water quality, etc.
3. Improvement/upgrading needs of existing major water resources in the locality. Determine existing and potential sources of pollution.
4. Other alternative sources of water that can be tapped for future development.
5. Projected water demand for the city/municipality. Coordinate with the local water districts/cooperatives or the LWUA, whichever is available in the area, on how to determine the water demand of the locality. Computation may be guided by the following standard requirement developed by LWUA:

Type of Consumer	Level II	Level III
a. Residential	60 lcpd communal faucet	100 – 110 lcpd individual connection
b. Commercial/Industrial	1.0 – 2.0 cumd/connection	
c. Institutional	3.0 cumd/connection	

#### IV. Sector Analysis Matrix

**A. Consolidate and validate the findings of the above steps with the result of the consultation.**

1. List the key issues, problems, and concerns of the water supply utilities sector.
2. Determine the possible implications/impacts of the key issues, problems, and concerns.

**B. Recommend interventions such as:**

1. Realistic policy options and appropriate strategies
2. Programs and projects for implementation with due consideration of current and pipeline projects.

**C. Prioritize, tabulate and present the results in matrix form as follows:**

**(Sample) Water Analysis Matrix**

<b>Technical Findings/ Observations</b>	<b>Implications (Effects)</b>	<b>Policy Options/ Recommendations</b>
<ul style="list-style-type: none"><li>• Level I water system in Brgy. X contaminated</li><li>• Presence of dumpsite near water source</li></ul>	<ul style="list-style-type: none"><li>• Health risk to population</li></ul>	<ul style="list-style-type: none"><li>• Upgrading to Level II water supply system</li><li>• Relocation of nearby dumpsite to eliminate groundwater contamination</li></ul>
<ul style="list-style-type: none"><li>• Insufficient water to supply the Poblacion area</li></ul>	<ul style="list-style-type: none"><li>• Expensive cost of water</li></ul>	<ul style="list-style-type: none"><li>• Develop potential water sources</li><li>• Coordinate with local water district to increase water pressure/supply in the area.</li></ul>

**TABLES**

**Table 90. Level I Water Supply System by Type and Number of Population Served, Year \_\_\_\_**

Barangay	Shallow Well			Deep Well			Improved Spring		
	Number	HH Pop. Served		Number	HH Pop. Served		Number	HH Pop. Served	
		No.	%		No.	%		No.	%

Source: Local Waterworks District

**Table 91. Level 2 Water Supply System by Type and Number of Population Served, Year \_\_\_\_**

Location of Water Sources	Number of Pumps	Number of Communal Faucets	Barangays Served	No. of HH Population Served

Source: Local Water District

**Table 92. Level 3 – Local Waterworks System by Type and Number of Consumers and Average Water Consumption, Year \_\_\_\_**

	Type of Consumer				Total
	Domestic	Commercial	Industrial	Others	
No. of Connections					
Average Water Consumption					
Barangays Served					

Source: Local Water District

**Table 93. Other Water Sources, Year \_\_\_\_**

Barangay	Number of Household Population Served			
	Undeveloped Spring	Open Dug Wells	Rainwater	Water Peddlers

Source: Local Water District

**Table 94. Existing Surface Water Resources by Type and Classification, Year \_\_\_\_**

Surface Water (e.g. lakes, rivers, water impounding structures, etc.)	Location	Classification (e.g. Class AA, A, B, C, D. Ref.: Annex 1)

*Annex 24*

**CLASSIFICATION OF FRESH SURFACE WATER  
(Rivers, Lakes, Reservoirs, etc.)**

CLASSIFICATION	BENEFICIAL USE
Class AA	Public Water Supply Class I. This class is intended primarily for waters having watersheds which are uninhabited and otherwise protected and which require only approved disinfection in order to meet the National Standards for Drinking Water (NSDW) of the Philippines.
Class A	Public Water Supply Class II. For sources of water supply that will require complete treatment (coagulation, sedimentation, filtration and disinfection) in order to meet the NSDW.
Class B	Recreational Water Class. For primary contact recreation such as bathing, swimming, ski diving, etc. (particularly those designated for tourism purposes).
Class C	<ol style="list-style-type: none"> <li>1. Fishery water for the propagation and growth of fish and other aquatic resources.</li> <li>2. Recreational Water Class II (boating, etc.)</li> <li>3. Industrial Water Class I (for manufacturing processes after treatment.)</li> </ol>
Class D	<ol style="list-style-type: none"> <li>1. For agriculture, irrigation, livestock watering, etc.</li> <li>2. Industrial Water Supply Class II (e.g. cooling, etc.)</li> <li>3. Other inland waters, by their quality, belong to this classification.</li> </ol>

Source: DENR AO No. 34 otherwise known as “Revised Water Usage and Classification/Water Quality Criteria” amending section nos. 68 and 69 Chapter III of the 1978 NPCC Rules and Regulations.

## Sectoral Studies

# INFORMATION AND COMMUNICATION TECHNOLOGY

## Volume 2

# A Guide to Sectoral Studies in the CLUP Preparation

### STEPS:

#### I. Data Gathering and Processing

##### A. *Generate the following data/information using the data gathered from different sources and present in table format:*

1. Communication Services Facilities, Year \_\_\_\_ (Table 95)
2. Type of Print Media Available, Year \_\_\_\_ (Table 96)

*The output tables are basic information from which assessment of the level of service of the information and communication technology sector may initially proceed. Other relevant information may be gathered through a consultation process.*

##### B. *Determine the felt needs, aspirations and issues of the community relative to information and communication technology sector through consultations such as general assembly, focus group discussion, barangay consultations with identified stakeholders.*

Gathering of information on felt needs and aspirations of the population maybe facilitated by designing /structuring questions as follows:

1. *What issues and concerns related to information and communication would you want to be addressed?*
2. *In what ways can you (as a resident/community member, stakeholder) address/resolve these issues and concerns?*
3. *In what ways can the government address/resolve these issues and concerns?*
4. *What are your aspirations to improve the level of information and communication?*

##### C. *Gather additional data/information if warranted by the results of the consultations/ meetings conducted.*

## **II. Data Analysis**

Assess the presence or absence and capacity of information and communication facilities/services in the locality and provide a report in terms of the following:

1. Type, number, and location/area coverage of existing information and communication facilities.
2. Volume of postal and telegraph transactions (letters, telegrams, packages, telegraphic transfers, etc.) for the past 3 years.
3. No. of letter carriers
4. Number and area coverage of telephone subscribers, public calling office.
5. Availability and coverage of print and/or broadcast media, cellular communications tower, meteorological facilities (weather tracking stations/radar), etc.
6. Availability of internet service facilities/providers.

## **III. Current and Projected Needs**

Determine the current and future development needs of the information and communication technology sub-sector in terms of the following:

1. Need for basic information and communication services based on the following standards:
  - One telephone station per municipality
  - One telegraphic transfer per municipality
  - One post office per municipality
  - One letter carrier per 5,000 population
  - One Public Calling Office per city/municipality without telephone service.  
(Public calling office is a facility that offers basic telecommunication services such as outgoing telephone calling, 2-way telegraph service, and incoming message reception and delivery. Other services such as telex and facsimile may be offered).
2. Indicate areas which will have urgent needs for future ICT service and facility considering the following:
  - Nearness to network center
  - Predominance of economic-related establishments
  - High rate of increase in population
  - Increasing economic status of the residents
  - Areas not presently served
  - Presence of similar firms in the area

#### IV. Sectoral Analysis Matrix

*A. Consolidate and validate the findings of the above steps with the result of the consultation/s.*

1. List the key issues, problems, and concerns of the information and communication technology sector.
2. Determine the possible implications/impacts of the key issues, problems, and concerns.

*B. Recommend interventions such as:*

1. Realistic policy options and appropriate strategies
2. Programs and projects for implementation with due consideration of current and pipeline projects

*C. Prioritize, tabulate and present the results in matrix form as follows:*

**(Sample) Information and Communication Sector Analysis Matrix**

<i>Technical Findings/ Observations</i>	<i>Implications (Effects)</i>	<i>Recommended Interventions</i>
<ul style="list-style-type: none"><li>• Lack of social acceptability for cell sites due to assumed health/ security reasons.</li><li>• No telephone services available in the locality</li></ul>	<ul style="list-style-type: none"><li>• Low economic investment</li><li>• Residents deprived of fast, modern, and efficient telecommunication services</li></ul>	<ul style="list-style-type: none"><li>• Advocacy for social acceptability of telecommunication facilities</li><li>• Representation/ coordination with telephone companies to extend services in the area</li></ul>

**TABLES****Table 95. Communication Services Facilities, Year \_\_\_\_\_**

<i>Type</i>	<i>Barangay</i>	<i>Ownership</i>	
		<i>Public</i>	<i>Private</i>
Postal services			
Internet providers			
Telephone service provider			
Cell sites network			
Public calling stations			
Broadcast and television Network*			
Others			

Source: NTC, Public/Private Companies

\* Radio Stations, Television Station, Cable TV

**Table 96. Type Of Print Media Available, Year \_\_\_\_\_**

Type of Print Media	Location	Area Coverage	Circulation		
			Number	Type	Frequency

Source: National Telecommunication Commission/Local Companies

# INTEGRATED INFRASTRUCTURE SECTOR ANALYSIS

1. Convene technical/sectoral working groups to undertake the following:
  - a. Determine the contribution of the sector to the quality of life of the population based on the following indicators, among others, by comparing the current or latest information with the previous data:
    - Percentage of households served by power, waterworks system, garbage collection
    - Adequacy of roads, urban and rural
    - Availability/frequency/capacity of transportation services
    - Percentage of households served by communication facilities
  - b. Cross-check/validate results of sub-sector studies for any duplication or inconsistencies in identified policies, programs, projects.
  - c. Prioritize the issues and problems generated from the sub-sector studies using the following criteria, among others:
    - Urgency of problem
    - Seriousness of the problem
    - Extent/magnitude of population directly or indirectly affected
    - Impact of problem on the strengths, potentials, opportunities and on the achievement of the vision of the locality.
    - Other criteria as may be agreed upon
2. Tabulate prioritized issues/problems with corresponding interventions (policies, programs/projects). This can be presented as follows:

<i>Technical Findings/ Observations</i>	<i>Implications (Effects)</i>	<i>Recommended Interventions</i>
1. Brgy. A has no potable water supply	<ul style="list-style-type: none"> <li>• Identify and develop sources of water</li> <li>• Establish water distribution system</li> </ul>	<ul style="list-style-type: none"> <li>• LGU/Local Water District</li> <li>• LGU/Local Water District</li> </ul>
2. Traffic congestion	<ul style="list-style-type: none"> <li>• Adoption and implementation of traffic management scheme</li> <li>• Road widening</li> </ul>	<ul style="list-style-type: none"> <li>• LGU/traffic enforcers</li> <li>• LGU/DPWH</li> </ul>