

**MINISTRY OF URBAN DEVELOPMENT AND  
CONSTRUCTION**

**URBAN PLANNING COORDINATING BUREAU**

**Manual for the Preparation and Implementation  
of Basic Plans (Structure Plans) of Small  
Towns of Ethiopia**

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## Acronyms

CSA-	Central Statistical Agency
CBOs-	Community Based Organisations
EMA-	Ethiopian Mapping Agency
EPA-	Environmental Protection Authority (of Ethiopia)
FUPCoB-	Federal Urban Planning Coordinating Bureau
LED-	Local Economic Development
MoE-	Ministry of Education
MoH-	Ministry of Health
MSEs	Micro and Small Scale Enterprises
NGOs-	Non Governmental Organizations
UN-	United Nations

# **PART I:- INTRODUCTION**

# CHAPTER ONE

## 1. INTRODUCTION

### 1.1 Background

Small towns development program has been indicated as one of the major activities in one of the five pillars of urban development agenda of Plan For Accelerated and Sustained Development to End Poverty (PASDEP) i.e. in pillar five (strengthening of rural-urban and urban-urban linkages). It is also worth mentioning that small towns development project was one of the three projects in the urban planning improvement sub-program of the Urban Good Governance Package. At a federal level, within the urban planning improvement sub-program, the small towns development project embraces the following broader activities:

- Preparation of concept paper/inception report on small towns development program;
- Preparation of basic maps by the help of remote sensing in the form of a pilot test;
- Preparation of basic maps for 600 small towns by the use of remote sensing technology;
- Compilation of information on basic social, economic and other related data on small towns and their hinterland;
- Preparation of basic plans for 600 small towns; and,
- Implementation of basic plans and infrastructure development plans.

In line with the above activities, the concept paper on small towns development program has been prepared and various awareness raising programs have been conducted. In addition to this, about 483 plans (basic plans and other types of urban plans) have been prepared by various bodies mainly by the regions own capacity. The preparation of base maps by the help of remote sensing in the form of a pilot test has been in the verge of completion while the preparation of base maps for 150 small towns is in the pipeline.

Basic plan is one type of urban plan which can be embraced within the framework of structure plan and it is contemplated that basic plans should be incorporated in the regulation that will be issued/prepared at a federal level as part of easing implementation of Proclamation No. 574/2008 i.e. "Urban Planning Proclamation".

Basic plan is supposed to be a 10 years structure plan which focuses on major spatial and infrastructure components while due attention is also paid to environmental, social and economic issues. At the same time, from the point of view of the size of small towns, it is intended to be implementation oriented. Generally speaking, such type of plans would give a general framework for towns at an earlier stage and serves as a basis for other types of plans to be prepared in the future. The preparation and implementation of Basic Plan is not as such new and hence, Setagaya, a city in Japan is worth mentioning though it is not clear whether it has been supported by maps or not.<sup>1</sup>

## **1.2 Definition of Small Towns**

In the context of small towns development program, the definition of small towns constitute towns below 20,000 population in that out of the 922 towns in the country, nearly 829 can be designated as small towns. In this category, centers below 2000 population that are designated by the competent authority as towns are incorporated (See table 1.1). It should be noted that different countries use varying number of population to designate small towns.<sup>2</sup>

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<sup>1</sup> *The Setagaya city basic plan is a basic guideline for administration of the city government for the 10 years period as of April 2005. In this respect five main goals have been targeted in the plan as well as "Lead Project", with city residents, business organizations and the administration joining forces work towards the goals. Two supplemental three-year plans, namely, "Setagaya Implementation Plan" and the "Setagaya Administrative Management Reform Plan", starting from fiscal year 2005, to promote the 10 year measures mentioned in the basic plan.*

<sup>2</sup> *In Scotland, Mexico, China, and Ghana for instance, small towns are towns with a population ranging between 1000 and 20,000; 10,000 to 25,000; upto 20,000; and between 5,000 and 50,000 respectively.*

**Table 1.1:** Number of small towns along with their respective number of population

Ser.no	Region	No. of small towns	Total No. of Population	No. of towns below 2000 population
1	Afar	27	103,281	13
2	Amhara	187	1,019,837	34
3	Benishangul	12	41,773	3
4	Gambella	6	15,718	2
5	Oromyia	341	1,819,673	68
6	SNNPRS	134	614,748	30
7	Somali	55	339,737	10
8	Tigray	64	284,230	24
Total		829	4,238,997	84

Source:- Central Statistical Authority (1994 E.C.), Statistical Abstract, 2006, A.A.

### **1.3 Rationale and Opportunities for the Preparation of Urban Plans of Small Towns**

The rationale behind the preparation of basic plans for small towns in the country can be pinpointed as follows:

- The presence of significant number of population in small towns and their respective influence area - In 2006, small towns constitute 4,238,997(34.8%) of the total urban population of the country (12,172,000);
- The role played by these towns to alleviate poverty;
- The involvement of large number of people in occupations pertaining to rural-urban interaction;
- Provision of services and enhancement of income of the society;
- They contain immigrants that could otherwise migrate to larger towns; and,
- To realize food security programs.

At a country level, the opportunities that could play a part in strengthening rural-urban linkage and of course the development of small towns program are the presence of various institutions that play a part in strengthening urban-rural linkage (infrastructure, training, credit, market, research, etc.); the significance of various policies, strategies and programs in strengthening urban-rural linkage; the access of farmers to land; the improvement and expansion of physical infrastructure services; the establishment of various rural centers due to construction of roads, large farms, large agro-industries, etc; cooperation and sharing of experiences among Regions; and, the possibility of transforming of the settlement areas into meaningful development corridors/centers along with other development endeavors of the government. It should, however, be noted that there are various problems that need to be alleviated for the smooth implementation of the small towns development program in general and basic plans in particular.

#### **1.4 Basic Principles**

The basic principles are indicated in terms of both the realization of small towns development program in general and the realization of the preparation of basic plans in particular. From the point of view of the realization of small towns development program, the following basic principles are forwarded:

- The developmental efforts of both urban and rural areas must be participatory;
- The need for integrated development in urban and rural areas;
- The need for integrated sectoral investments in urban and rural areas;
- Developmental programs in small towns must be based on local resources;
- Various intervention measures should take account of agro-ecological conditions, economic, cultural and other aspects; and,
- The private sector should play a key role in small towns development program.

On the other hand, the preparation of basic plans for small towns should take account of the following basic principles:

- Participatory- The preparation of basic plans should ensure the involvement of various stakeholders preferably by institutionalizing participation events. Participation can be ensured through the involvement of various professionals in the respective urban areas, through the involvement of the urban residents and neighboring peasant associations particularly during data collection, concept plan preparation and overall presentation of the plan.
- Maintain hierarchy of plans- The hierarchy of the plans should be maintained in such a way that basic plans should respect and take account of plans at a higher level;
- Strategic orientation in that the plan should focus at alleviating major problems.
- The overall plan preparation, implementation and monitoring and evaluation should be considered in a cyclic way and hence, the officials of respective town administrations should coordinate and involve at the various stages of the planning process.
- The preparation of basic plans should be designed in such a way that sustained development should be ensured among others by giving due attention to environmental issues of a given town and its surrounding.
- The plans should consider long term Vision.
- Mixed use of various land use activities should be encouraged.
- The proposals envisaged in the basic plans should consider the economic and technical capacity of the respective urban areas and their neighboring rural areas.
- Basic plans should be designed among others to integrate urban and neighboring rural areas.
- The preparation of basic plans should be integrated with various sectoral programs.
- Basic plans should be flexible enough to accommodate unforeseen circumstances.

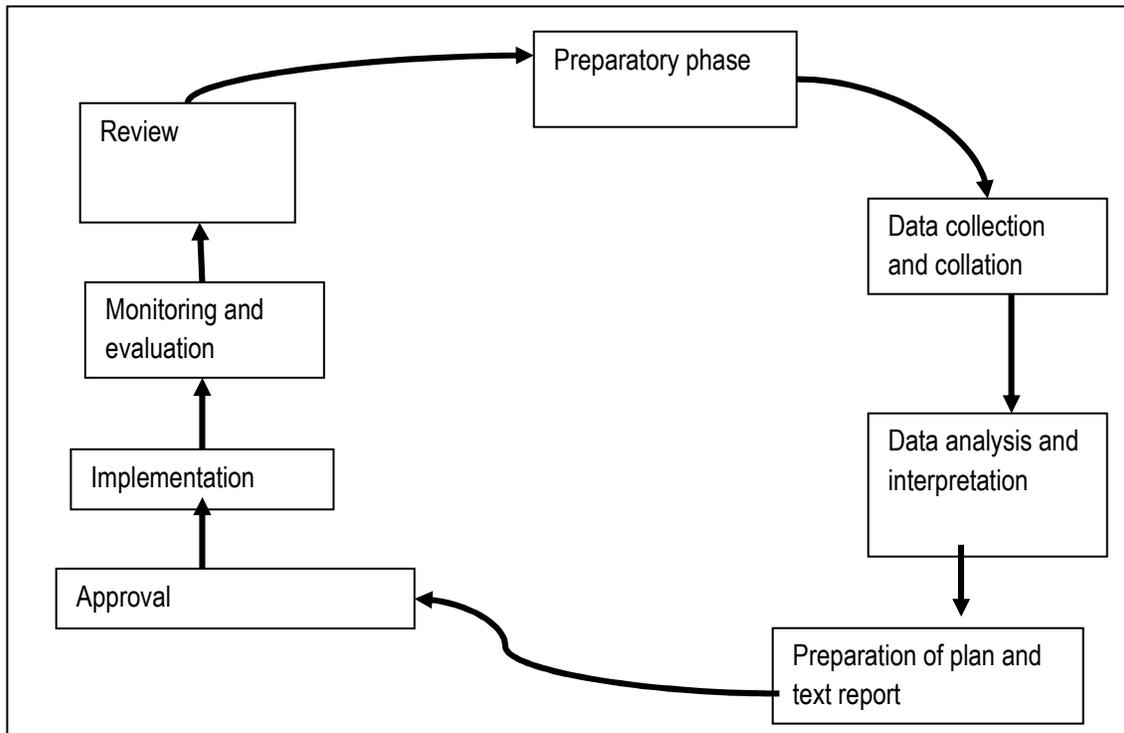
## 1.5 The Planning Process of Basic Plans

Basic Plan is a 10 year implementation oriented urban plan that constitutes both a document and maps which among others incorporates basic development direction of small towns and major land use activities.

The major planning processes of basic plan are the following:

- Preparatory phase;
- Base map preparation (This is not considered in this manual, hence, other arrangements will be made for the training);
- Data collection and collation using rapid appraisal techniques- The data collected should include historical, physical, environmental, infrastructure services, demographic issues, social aspects, housing, economic, spatial and other related issues that are peculiar to the study area.
- Data analysis, identification of planning issues and concept plan preparation- At this stage it is worth noting to conduct public participation and conduct discussions with pertinent government officials and other stakeholders;
- Preparation of basic plan and relevant documents;
- Approval;
- Monitoring and evaluation; and,
- Plan review.

**Figure 1.1** Urban Planning Process for basic urban plans



## **1.6 Purpose of the Manual**

The manual is designed for professionals at Regional Works and Urban Development Bureaus, Regional Urban Planning Institutes/Units, local/municipal level and the private sector to serve as a day to day reference material while preparing basic plans in particular and help the preparation of other types of plans in general. It can also serve as a useful tool for Regions or local governments to follow-up various types of plans outsourced to the private sector. It is also designed to serve as a training material by respective regions to municipalities.

## **1.7 Methodology**

The preparation of the manual has been mainly conducted on the basis of the rich and long standing experience of the Federal Urban Planning Coordinating Bureau (FUPCoB) in the preparation of various types of urban plans, preparation of various checklists, and provision of various training programs. An attempt has also been made to get lessons from the seven urban planning manuals that had been commissioned by the Ministry of Works and Urban Development. A series of discussions has also been made to improve the contents of the manual in the then Ministry of Works and Urban Development in general and in the Federal Urban Planning Coordinating Bureau (Now Urban Planning Work Process) in particular.

## **1.8 How to use the Manual**

This manual is prepared in a user friendly manner so as to apply by a wide range of professionals in their specific areas of study. An attempt has been made to incorporate various aspects that are usually considered for other types of plans (for instance structure plans) while providing 'optional' items for variables that are either irrelevant for the area of study or information on the required variable is not available. It is recommended that flexibility should be maintained in employing this manual in various respects as there are variations in population size, areal extent of urban areas, complexity of urban problems and hence, varying

priorities of urban areas. We would also like to remind that an attempt should be made to refer to the following four manuals that have been prepared by the Federal Urban Planning Coordinating Bureau while preparing basic plans as some of the manuals are recommended to thoroughly look at them if it is deemed necessary:

- Participation Manual for Urban Planning;
- Rural-Urban Linkage Manual;
- Urban Storm-Water Drainage Design manual; and
- Urban Expansion Area Selection Guideline.

## **1.9 Structure of the Manual**

This manual is organized into two parts in that the first part of the manual deals with the introduction while the second part deals with the procedural aspects of the manual. The procedural manual consists of three phases (Preparatory Phase, Data Collection Phase and Data Analysis and Interpretation Phase) while fourth phase i.e. Proposal of land use phase is indicated in Land Use Plan Preparation. Tasks, activities and tips are discussed in each chapter. Each item/study of the manual has its own questionnaire formats, data types and planning implications and references.

The last chapter, which is Implementation, Approval, Monitoring and Evaluation, has different phases from the remaining six chapters of the Procedural Manual.

## References

African Studies Quarterly (March 2005), Small Towns in Ghana: Justifications for their Promotion Under Ghana's Decentralization Program (Accessed from the Internet).

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## **PART II:- PROCEDURAL MANUAL**

## **CHAPTER TWO**

### **2. PHYSICAL AND ENVIRONMENTAL ISSUES**

#### **2.1 Background**

The purpose of this chapter of the manual is to help urban professionals/planners to collect, analyze and interpret, and organize a report on physical and environmental issues, infrastructure and some municipal services within a short period of time. Moreover, it is intended to give a consistent data collection, analysis and interpretation, and report organization procedures for all actors (federal, regional, and town levels, and the private sector) involved in the basic plan preparation. It may also help urban planners to avoid redundancy and save time and cost during basic plan preparation processes.

The first phase presents the preliminary work that begins with preparation for data collection. Phase two presents the data collection process that incorporates data types and sources and methodology employed, and data compilation tasks. Phase three presents the data analysis and interpretation of the compiled data that incorporates data analysis and interpretation, procedures, formula and standards and, proposals and finalization of works.

Finally, in its last part, this chapter consists of annexes, including selection procedures for expansion areas and criteria, exhaustive sources and methods of data collection, planning implications for each data type, and sample data collection formats.

## 2.2 PHASE ONE – PREPARATORY WORK

### Purpose:

- The main purpose of this phase is to undertake various preliminary works so as to smoothen the consecutive tasks particularly the collection of data.

### Outputs:

- Checklists;
- questionnaires
- Base maps, Topographic maps;
- Summary results/information of the background assessment; and,
- Field work schedule.

**Time Required:** 5 -7 days

### **Task 1: Identify the Type of Data Required and Update Collection Formats**

#### **Activity 1: Decide what data types are required**

- At influence region, and
- At urban level.

#### **Activity 2: Prepare (update) the necessary respective (regional as well as urban) data collection formats (see annex 3).**

- Questionnaires,
- Checklists, and
- Regional, Zonal and Wereda Political and Infrastructure Maps (optional).

## **Task 2: Acquire Data and Relevant Maps**

**Activity 1: Prepare blueprint of the urban base map with appropriate scale (1:5000 and/or 1:2000)**

**Activity 2: Purchase/Get Topographic Maps of 1:50,000 scale (optional)**

**Activity 3: Get/purchase climatic data (if not available at hand)**

## **Task 3: Conduct Background Assessment**

**Activity 1: Review of previous urban plans (if any)**

**Activity 2: Review secondary documents such as CSA Abstracts, atlases and others and collect information on the following:**

- Geographical location and physical and environmental characteristics;
- Population size;
- Current status of the town, etc.

## 2.3 PHASE TWO- DATA COLLECTION AND COMPILATION

### Purpose:

- To obtain information on physical characteristics, physical infrastructure services, expansion areas and other components.

### Outputs:

- Filled questionnaires;
- Sketch maps; and,
- Compiled primary and secondary data.

**Time Required:** 10-15 days

### **Task 1: Data Collection**

The main physical/environmental, infrastructure and municipal data required for small towns basic plan preparation are outlined below. The conventionally known data types, sources and collection methods with their applications are provided as Tips at the end of each activity and they are indicated in annex 2. The data contents may vary based on the local condition of the project town.

#### **Activity 1: Delineation of the influence region/hinterland area**

- Conduct discussion with stakeholders; and,
- Identify the influence region for the project town (areas with strong linkage).

#### **Activity 2: Collect physical and environmental data of the influence region**

- Get location map of the Influence Region with appropriate scale (optional);
- Collect data on geographical setting of the influence region

- ✓ Absolute geographical location (coordinates) including borders (optional),
- ✓ Relative geographical location or the position of a place with reference to important political and geographical units, landmark and/or notable water bodies, and
- Collect data on natural resources (topography, drainage, climate, soil, mineral, vegetation and wildlife) (optional).

**Activity 3: Collect influence region's area, population and urban system data (Optional)**

- Get area and population size of the influence region:
  - ✓ Total area of the study region (km<sup>2</sup>),
  - ✓ Total area of cultivated land and cultivable land (optional),
  - ✓ Population size of the study region (total, urban and rural population),
- Collect data on regional urban system (optional)
  - ✓ Get map of regional urban settings and spatial distribution.

**Activity 4: Collect information on physical infrastructure elements of the study region**

- Collect transport data:
  - ✓ Get regional road map of appropriate scale,
  - ✓ Get data on the road types and length,
  - ✓ Get data on other transport systems (air, rail and water), and
  - ✓ Get data on traditional transport system.
- Collect communication systems data (optional):
  - ✓ Get telecommunication (fixed and mobile) service data,
  - ✓ Get internet service data, and
  - ✓ Get postal service data.
- Collect electric service data (optional), and
- Collect water service data (optional)

**Activity 5: Collect information on urban-urban and rural-urban linkage.**

- Collect administrative service linkage data,
- Collect infrastructure linkage data, and
- Municipal service linkage information.

**Activity 6: Collect information on physiographic features of the project town**

- Get base map of the project town (1:5000, 1:2000) or other available appropriate scale and conduct field observation.
- Get data for location of the town:
  - ✓ Absolute location (optional),
  - ✓ Relative location.
- Area and shape of the town (Optional)
- Topography
  - ✓ Altitude/elevation,
  - ✓ Get contour map.

- Drainage system
  - ✓ Type and condition of surface water drainage basins /catchments/,
  - ✓ Efforts made to conserve the water resources from being contaminated by urban wastes and the utilization (allocation) of land astride on the banks of rivers for compatible activities

**Activity 7: Collect Climatic data of the project town**

- Temperature
  - ✓ Daily extremes ( maximum, minimum) and average (optional),
  - ✓ Monthly maximum, minimum and average, and

- ✓ Yearly maximum, minimum and average.
- Rainfall
  - ✓ Mean monthly, and
  - ✓ Mean annual.
- Humidity (optional)
- Wind
  - ✓ Wind direction, and
  - ✓ Wind speed (optional).

**Activity 8: Collect data on physical infrastructure of the project town**

- Road
  - ✓ Existing condition of the road network for suitability in terms of accessibility and surface condition;
  - ✓ Condition of pedestrian walkway and bikeway;
  - ✓ Types of means of transport in the town; and
  - ✓ Existing condition of bus station (if there is bus station)
- Power supply
  - ✓ Type of service, capacity, service duration, consumption by customer type and Kebele;
  - ✓ Street lighting system (optional);
  - ✓ Office location and distribution centers;
  - ✓ Problems and prospects of power services (optional); and
  - ✓ High-tension lines and sub-station.
- Telecommunication
  - ✓ Type of services, capacity and customers by type and Kebele;
  - ✓ Office availability and accessibility; and
  - ✓ Problems and prospects of telephone services.

- Postal services (optional)
  - ✓ Type of services and sufficiency;
  - ✓ Location and accessibility; and
  - ✓ Problems and prospects of postal service.

**Activity 9: Collect relevant information on natural and man-made constraints for future development of the project town**

- Get base map of the town and conduct field observation
  - ✓ Identify and sketch natural constraints which are related to topography, like excessively high and/or low gradient, watercourses and gullies, geological hazards, etc.
  - ✓ Identify and sketch man made constraints (substation and high tension lines, airport, military camps, quarry (mining) sites, etc.)

**Activity 10: Collect relevant information on services of towns (Optional)**

- Collect data on General Market and Gulit/daily market/
  - ✓ Get location map of the market (1:5000, 1:2000);
  - ✓ Location
    - Accessibility,
    - Centrality, and
    - Compatibility.
  - ✓ Topography/slope;
  - ✓ Size of space;
- Collect data on Livestock Market
  - ✓ Location
    - Peripherality,
    - Accessibility,

- Compatibility.
- ✓ Topography
- ✓ Area/size
- ✓ Major flow direction (s) of livestock
- ✓ Location map (1:5000/ 1:2000)
- Collect relevant data on Abattoir
  - ✓ Location
    - Accessibility
    - Compatibility
  - ✓ Area
  - ✓ Wind direction
- Collect relevant information on Religious centers and cemetery
  - ✓ Location;
    - Accessibility
    - Compatibility
  - ✓ Aesthetic impact
  - ✓ Area;
  - ✓ Number of followers of major religions; and,
  - ✓ The number, size and spatial distribution of existing cemeteries/graveyards.

## **Task 2: Compile Collected Data**

### **Activity: Organize your data using appropriate methods**

- Tally qualitative/quantitative information as required;
- Tabulate the statistical data;
- Present the data in the form tables; and,
- Organize appropriate maps/diagrams as required.

### **Tips to Phase 2: Data Collection Methods and Sources (TASK 1)**

- Key Checkup Questions
  - ✓ Have all the relevant (qualitative as well as quantitative) data been collected?
  - ✓ Have all key resources been exploited?
  - ✓ Are the key stakeholders consulted?
  
- Collect Primary data through:
  - ✓ Interview (Informal or guided interviews);
  - ✓ Structured or other types of questionnaires;
  - ✓ Field observation, recording and sketching/mapping;
  - ✓ Reviewing existing Base Maps and Topographic maps;
  - ✓ Purchasing raw data from National Meteorological Services Agency; and,
  - ✓ Public and stakeholders discussion.
  
- Collect secondary data through reviewing:
  - ✓ CSA, census and sample survey results;
  - ✓ CSA Statistical Abstracts and Regional/Zonal Socio-Economic Profiles;
  - ✓ National/Regional/Zonal Atlas;
  - ✓ Unpublished reports of Regional Bureaus, Zonal and Wereda Offices of Finance and Economic Development;
  - ✓ Unpublished reports of zonal and Wereda administrative offices, etc.; and,
  - ✓ Structured or other types of questionnaires.

## 2.4 PHASE THREE- DATA ANALYSIS AND INTERPRETATION

### Purpose:

- To give a realistic assessment of the situation at hand and to draw critical problems and gaps to be addressed in the subsequent planning processes.

### Outputs:

- Final Report
- Slope and constraint map/maps (optional)

**Time Required:** 20– 25 days

### Task 1: Delineation of the Influence Region

#### Activity 1: Define the influence area/region

- The influence area could be identified and delimited based on a thorough assessment of various physical, socio-economic and environmental parameters. In accordance with this, physical/environmental experts, town planners/architects, demographers/sociologists and other related professionals should be involved in the selection process.
- Participatory approach will be mandatory (in which the stakeholders have to be participated and make decisions) for such influence area selection.
- The major technical criteria that need to be addressed in such selection process are presented in the following tips.

**Tips to Task 1:**

The major elements that should be considered in the selection criteria of influence area among others include the following:

- a) Geographical proximity;
- b) Services catchments (school and health facilities);
- c) Supply of agricultural products;
- d) Market catchments;
- e) Interaction in terms of both passenger and freight flow;
- f) Availability of development projects;
- g) Administrative (political) influence; and,
- h) Recreation and tourist related impacts.

To emphasize how the process of delineating of influence region is going on, the case of Metu town is presented in table 2.1.

**Example of Influence Region Delineation of Metu Town:**

In the delineation of the influence area of Metu town, weighting and ranking methods are employed. Accordingly, values above 40 are considered to be included in the influence area/region i.e. Ilubabor Zone.

**Table 2.1:** Influence area/region and delineation for Metu town (optional)

Values in % Weredas from different Zones and regions		Administrative services (30)	Transport interaction (15)	Service catchments		Market catchment s (15)	Recreation and tourist sites (10)	Rural supply catchments (15)	Total	Rank
				School 7.5	Health 7.5					
Weredas from Ilubabor Zone	Nano-Sale	20	7	-	7.5	7.5	5	7.5	54.5	9
	Ale-Didu	20	12	-	7.5	13	10	13	75.5	2
	Halu-Bure	20	8	-	7.5	11	5	11	62.5	6
	Metu	30	15	7.5	7.5	15	10	15	100	1
	Darimu	20	9	-	7.5	12	5	12	65.5	4
	Yayu-Hurumu	20	14	-	7.5	13	5	13	72.5	3
	Alge-Sachi	20	11	-	7.5	10	5	10	63.5	5
	Chora	20	13	-	7.5	9	3	9	61.5	7
	Dega-Mako	20	11	-	7.5	8	3	8	57.5	8
	Bedele-Dabo	20	10	-	-	7.5	2	7.5	47	10
	Gechi-Borecha	20	6	-	-	7.5	2	7.5	43	11
	Dedesa	20	5	-	-	7.5	2	7.5	42	12
Bordering Weredas from East Wellega Zone		0	5	0	0		0	7.5	12.5	14
Bordering Weredas from West Wellega		0	5	0	0	0	0	7.5	12.5	14

Zone										
Bordering <i>Weredas</i> from Jima Zone	Jimma town	0	5	0	0	7.5	0		12.5	14
	Other <i>Weredas</i>	0	5	0	0		0	7.5	12.5	14
Bordering <i>Weredas</i> from GPNRS		0	4	0	5	0	0	7.5	16.5	13
Bordering <i>Weredas</i> from SNNPRS		0	4	0	5	0	0	7.5	16.5	13

Source: NUPI (August 2001), Report on the Development Plan of Metu Town, Addis Ababa

### **Activity 2: Analyze the organized physical and environmental data of the influence region**

- Describe location and interpret the influence region and its bordering areas with the help of appropriate maps;
- Analyze the available physical and natural resources such as topography; drainage, climate, water, soil, mineral, vegetation and wildlife; and,
- Determine its potential/opportunity and risks for development.

### **Activity 3: Analyze the area, population distribution and density of the study region**

- Calculate/measure the area of the study region;
- Evaluate population distribution and density of the influence region;
  - ✓ Compare and contrast the influence region with zonal, regional, etc, levels
  - ✓ Compare and contrast among *Weredas* within the study region (if the influence region includes more than two *Weredas*)
- Identify potentials and threats for development.

### **Tips to Activity 3:**

Calculate crude population density, agricultural density and physiological density using the following formulae:

- Crude population density =  $\frac{\text{Total population}}{\text{Total area (km}^2\text{)}}$
- Agricultural density =  $\frac{\text{Rural population}}{\text{Cultivated land (km}^2\text{)}}$  (optional)
- Physiological density =  $\frac{\text{Total population}}{\text{Cultivable land (km}^2\text{)}}$  (optional)

#### **Activity 4: Analyze the regional urban system.**

- Evaluate level of urbanization of the influence region
  - ✓ Calculate urbanization rate and compare with the national, regional, and zonal levels,
  - ✓ Compare and contrast level of urbanization at Wereda level within the influence region (if the study region includes two and more Weredas),
- Assess the distribution pattern and hierarchy of urban settlement,
- Identify weak and strong exemplification and peculiar characteristics

#### **Tips to Activity 4:**

To determine level of urbanization the following formula should be employed:

$$\text{Level of urbanization} = \frac{\text{Total Urban Population} * 100}{\text{Total Population}}$$

#### **Activity 5: Analyze physical infrastructure of the study region**

- Assess the transport system (road, rail, air, water and traditional) ;
- Road network distribution and density;
- Identify areas that need intervention;
- Describe the availability of telephone (fixed and mobile), postal, and electric services in the study region; and,
- Identify potentials and threats for development.

## **Activity 6: Analyze administrative and infrastructure linkage with the project town**

### **➤ Urban-Urban linkages**

- ✓ Administrative linkage,
  - Describe towns having administrative linkage with the project town and identify potentials and threats for development
- ✓ Physical infrastructure (transport, telephone and postal) linkage,
  - Describe towns having infrastructure linkage with the project town and the level of interaction, and
  - Show positive and/or negative impacts for development of the project town
- ✓ Municipal service linkage,
  - Describe towns having municipal services linkage with the project town and the level and types of interaction, and
  - identify potentials and threats for development
- ✓ Opportunities and threats of Urban-Urban linkage;

### **➤ Urban-Rural linkages**

- ✓ Administrative,
  - Describe rural areas having administrative linkage with the project town,&
  - identify potentials and threats for development
- ✓ Physical infrastructure (transport, telephone and postal),
  - Describe rural areas having infrastructure linkage with the project town and the level of interaction
- ✓ Identify urban service extension and activities that affect the rural environment,
- ✓ Identify opportunities and threats of Urban-Rural linkage;

*N.B. Those who have an interest to conduct detail study on linkage studies can refer FUPCoB, i.e. Federal Urban Planning Coordinating Bureau, now named as Urban Planning Work Process, 2009, Rural-Urban Linkage Manual.*

### Activity 7: Analyze the organized urban specific location and topographic data

- Describe location and area;
- Analyze shape, topography and slope of the town; and,
- Identify critical problems.

#### Tip to Activity 7:

##### Shape Analysis

- The shape of a town can be assessed by using different compactness indices such as Length-Breadth ratio, Compaction index, Elongation ratio and Circularity ratio which helps to know whether a certain town has a compact morphology or elongated in its shape which further affects the cost for infrastructure development and the level of incorporating fertile agricultural land. Compact urban shapes are advantageous in this regard.

- ✓ Length- Breadth ratio (L-B) ratio is expressed as;

Length of long axis of an area

Length of short axis of an area

**Long axis:** - a line joining the farthest points on the boundary in a straight line

**Short axis:** - the longest line perpendicular to the long axis between two other points on the boundary.

- ✓ Compaction Index (C.I):- is a more refined measure of compactness and is defined as:

**Area of the biggest inscribing circle**

**Area of the cell (an area) being measured**

- ✓ Results approaching a unit (one) indicate more compact shape and vice versa.

- ✓ Identify problems of interaction and infrastructure provision that arise due to elongated (linear) shape

### Slope Analysis

- Use **GIS** techniques (if available)
- If you **work manually**, follow the following procedures:
  - i. Get base map with contour lines ,
  - ii. Classify & delineate contour lines with similar spacing,
  - iii. Measure horizontal distance (H.E) using scale (ruler),
  - iv. Identify vertical interval (V.I) , and employ:

Slope =  $\frac{\text{vertical interval}}{\text{Horizontal Equivalent}} \times 100 \rightarrow$  percentage and if  $\times 60$  in terms of degree.

Horizontal Equivalent

**N.B.** If two points on the hillside are projected on to a horizontal plane, as they are on the map, the distance between them is known as the Horizontal Equivalent, while the difference in vertical height between the two points is known as Vertical Interval.

- ✓ Classify the slopes and produce a slope map with appropriate shading or standardized color (0-1, 1-2%, 2-5%, 5-10%, 10-15%, 15-20% and > 20%).
- ✓ Calculate area of each slope class and recognize (identify) the total area that could be potentially suitable for urban development. (Optional)
- ✓ Identify areas subjected to flooding and water stagnation (<1%)
- ✓ Identify areas with excessive slope for urban development activities (> 20%).

#### **Activity 8: Analyze climatic situation of the town**

- Calculate mean monthly, mean annual, etc temperature of the town,
- Identify extreme low and high temperatures,
- Calculate mean monthly and annual rainfall,
- Identify the prevailing wind directions and evaluate wind speed,
- Identify critical climatic problems for urban planning.

## Tips to Activity 8:

### Temperature Analysis

- Get 10 years climatic data from National Meteorological Services Agency, (if not available use at least 5 years data).
- Calculate mean daily, monthly and annual temperatures and present using tables and graphs
  - Mean daily temperature =  $\frac{\text{max. Daily temp.} + \text{Min. daily temp.}}{\text{Two}}$
  - Mean monthly temp. =  $\frac{\text{Sum of mean daily temperature for the month}}{\text{Number of days in the month}}$
  - Mean annual temp. =  $\frac{\text{sum of mean monthly temperature for one year}}{\text{Twelve}}$
- Identify extreme low and high temperatures

### Rainfall Analysis

Calculate mean monthly, and mean annual rainfall using:

- Calculate annual rainfall, mean annual rainfall and present using tables and graphs
  - Mean monthly rainfall =  $\frac{\text{sum of mean monthly rainfall a year}}{\text{Twelve months}}$
- Calculate annual rainfall, mean annual rainfall and present using tables and graphs
  - Mean annual rainfall =  $\frac{\text{sum of ten or more years yearly rainfall}}{\text{Number of years}}$

## **Tips to Wind Direction/Speed Analysis**

N.B. If wind direction data is available from other sources, there is no need to collect raw data and analyze step by step. In urban planning, the prevailing wind direction helps to determine the location of pollutant industries, waste disposal sites, abattoir, runway orientation, etc. Moreover, wind speed helps to decide whether wind break (shelterbelt) is needed to reduce and/or protect wind induced hazards and/or unwanted winds to increase outdoor human comfort.

### **Procedures**

- Get wind data (usually about 10 years daily observations are available);
- Tally daily observations by categorizing in to main wind directions and speed categories;
- Summarize daily observation in to months and year. Finally tabulate cumulative observation of wind direction and speed in one table;
- Interpret the result ; and
- Identify the prevailing wind direction and evaluate wind speed.

**N.B.** Daily wind observation has been usually provided in cardinal directions such as N, E, S, W, and fraction thereof. But, occasionally wind directions also provided in degrees.  $0^{\circ}$ ,  $90^{\circ}$ ,  $180^{\circ}$ ,  $270^{\circ}$  etc. In this case, the degrees should be converted in to cardinal directions. e.g.  $0^{\circ}/360^{\circ}$ ,  $90^{\circ}$ ,  $180^{\circ}$  and  $270^{\circ}$  are equivalent to N, E, S and W, respectively.

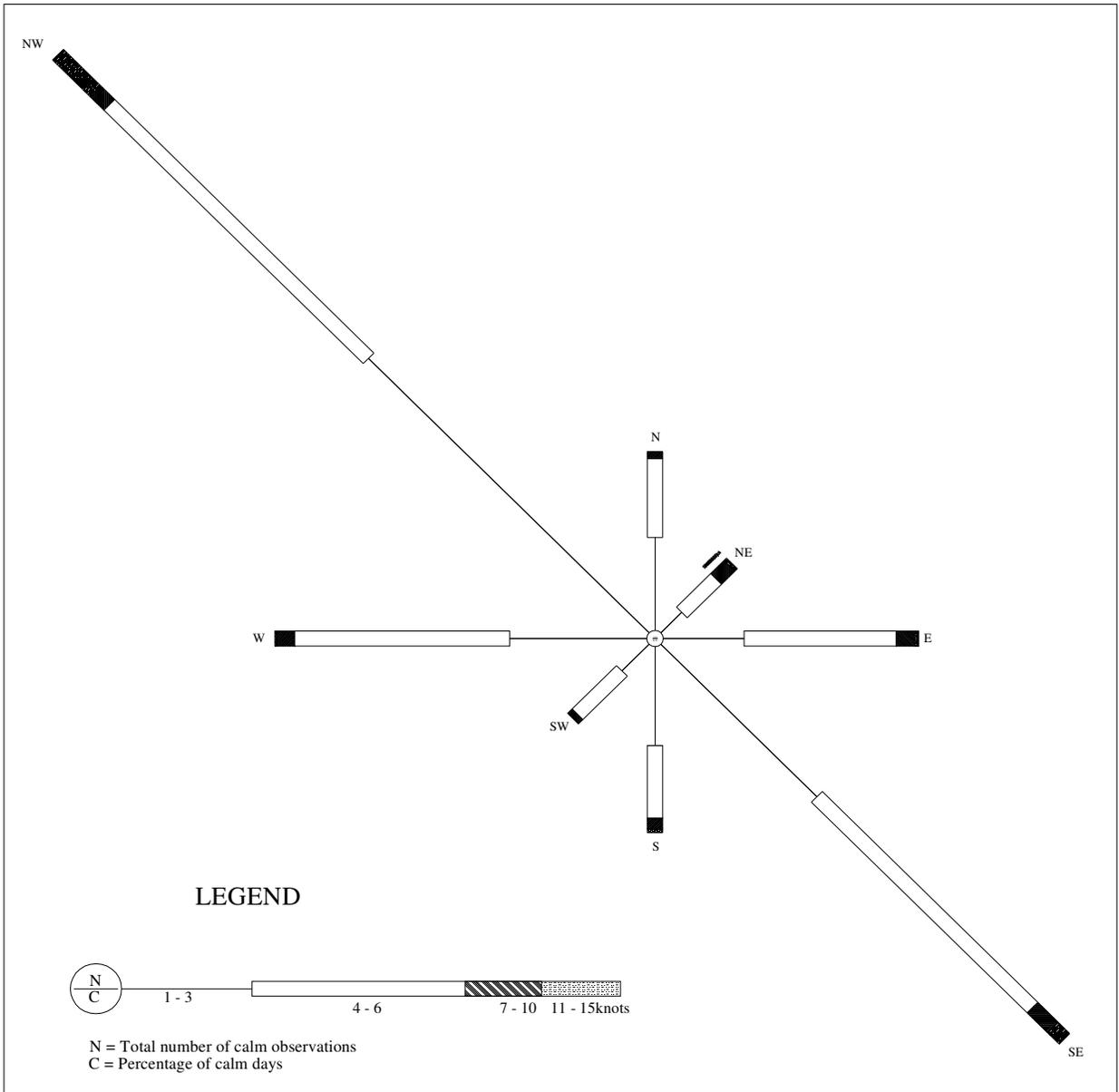
To show how wind direction and speed are analyzed and presented, the case of Assosa Town is presented in table 2.2.

**Table 2.2:** Summarized wind direction and speed of Assosa Town (2002 and 2003).

Direction		Calm	N	NE	E	SE	S	SW	W	NW	Total Observati on	Percent age
Seeped (m/sec)												
<1	No	251	-	-	-	-	-	-	-	-	251	<b>6.8</b>
	%	6.9	-	-	-	-	-	-	-	-	-	
1-3	No	-	72	114	260	103	82	193	420	40	1284	<b>35.2</b>
	%	-	54	32.9	33.3	39.5	55.4	37.5	37.0	48.2	-	
4-6	No	-	55	169	451	139	56	294	651	38	1853	<b>50.8</b>
	%	-	41.4	48.8	57.8	53.5	37.8	57.1	57.4	45.8	-	
7-10	No	-	5	49	56	11	8	23	59	5	216	<b>5.9</b>
	%	-	3.8	14.2	7.2	4.2	5.4	4.7	5.2	6.0	-	
11-15	No	-	1	14	13	8	2	4	4	-	46	<b>1.3</b>
	%	-	0.8	4.1	16.7	3.0	1.4	0.7	0.4	0.0	-	
Total	No	251	133	346	780	261	148	514	1134	83	3650	<b>100</b>
	%	<b>6.8</b>	<b>3.6</b>	<b>9.5</b>	<b>21.4</b>	<b>7.2</b>	<b>4.0</b>	<b>14.1</b>	<b>31.0</b>	<b>2.3</b>	<b>100</b>	

Source: National Meteorological Services Agency,

**N.B.** The above table can also be presented in Wind Rose diagram.



Wind Rose diagram of Assosa Town (Frequency distribution (%) of both wind speed and direction).

**Activity 9: Analyze major natural and man-made constraints for urban development**

- Identify critical natural and man-made constraints, and
- Prioritize expansion directions/areas.

**Tips to Activity 9:**

**Natural and Manmade Constraints**

- Identify critical natural constraints and sketch on the base map
  - ✓ excessively high and/or low gradient, watercourses and gullies, geological hazardous areas, etc
- Identify critical man-made constraints and sketch on the base map
  - ✓ High tension lines with 15kv,45kv,132kv,230kv, etc
  - ✓ Sub-station, airport, military camps, quarry (mining) sites, buffer zones, etc.
- The required average buffer zone for various constraints should be maintained. For instance, the recommended buffer zone for different capacities of high tension electricity cables as of EEPCo Standard is depicted in table 2.3.

**Table 2.3:** Required clearance (right of way) for high-tension electricity cables

Voltage line (kv)	Required clearance (right-of-way in meters)
15	7.5
35	10
45	10
66	10
132	15
230	20

**Activity 10: Analyze the organized data on physical infrastructure of the town**

- Assess the condition of existing road network in terms of accessibility & suitability, and identify major gaps;
- Describe the condition of pedestrian walkway, bikeway, motorway, etc.;
- Identify main means of transport in the town and major problems;
- Analyze the condition of traffic congestion and degree of car accidents (optional),
- Assess the availability of parking spaces and identify gaps between demand and existing conditions (optional);
- Assess the condition of bus station and identify gaps between the existing and required services; and,
- Identify key problems and gaps between the existing and the required power, telephone, postal and water services.

**Activity 11: Analyze the organized data on municipal services of the town:**

- Analyze existing condition of the general market and livestock market, and identify the gaps;
- Assess the existing situation of abattoir and identify gaps between the existing and required services; and,
- Assess the condition of religious centers, cemetery/graveyards and identify key problems.

### Tips to Selection of Bus Station (in Activity10)

- Factors to be considered in bus station site selection are:-
  - ✓ Accessibility: - bus station should be accessible by major and/or arterial road;
  - ✓ Compatibility: - considering intensity of vehicular traffic, it should be far from noise sensitive areas such as school, hospitals, libraries, etc.;
  - ✓ Topography: - it is preferable if the slope the site is 5% or lower;
  - ✓ Availability of infrastructure and other facilities (telephone, electric power, water pipeline ,etc.); and,
  - ✓ Area:- depends on the number and types of vehicles to be served.
- The selection and level of bus station depends up on many factors of which the number of vehicles that park at peak hour assigned in a day; the importance of the urban center as commercial, administrative, etc. and related activities that require numerous passengers, the extent of connection with important urban centers and level of connecting roads, etc are the major ones.
- The recommended area for varying levels of bus station is stated in table 2.4.

**Table 2.4:** Recommended area for varying levels of bus station

Level of bus station	Vehicle Types	Level	Required area/m <sup>2</sup>	Remarks
Small or Third level	Large	up to 5	300	Wereda centers
	Medium	up to 10	300	Centers of Agricultural Production
	Small	up to 15	300	Rural urban centers
	Total	30	900	
Medium or Secondary Level	Large	5-25	600	Zonal capitals
	Medium	10-45	720	Centers of commerce & agricultural products
	Small	10-55	720	Wereda centers
	Total	25-125	2040	

Source: Federal Transport Authority, 1998 E.C.

The area required for bus station can be determined following the vehicles (including their size) at peak hours and the size of the administrative blocks and circulation area for vehicles and pedestrians.

### **Tips to General Market (in Activity 11)**

Factors to be considered in General market site selection are:-

- Centrality:- it should be located in the central or near the central part of the town;
- Accessibility: - it should be accessible to collector roads. This is because the collector roads provide access and traffic circulation within residential, commercial and industrial areas;
- Compatibility:- it should not be located in areas where noise sensitive activities are located, e.g. schools, hospitals, libraries, etc.;
- Topography:- slope less than 5% is more appropriate; and,
- Area:- the size of a market is determined by the maximum number of market attendees of peak hour/season, and availability of enough space.

### **Tip to Livestock Site selection (in Activity 11)**

Factors to be considered in livestock market site selection include:-

- Peripherality: the site should be peripheral to avoid cattle intrusions;
- Accessibility: the site should be accessible to major arterial road or secondary arterial road;
- Compatibility:
  - ✓The site should not be located near schools, health services, worship places, etc.;
  - ✓The site should be outside the central part of the town where the volume of traffic may be high. If possible, it should be near abattoirs (for large towns only); and,
  - ✓It is preferable to locate livestock market in the dominant flow direction of livestock. If there are more than one dominant flow directions, common site should be selected.
- Topography: slope less than 5 percent and greater than 1 percent is preferable.

- Area: the size of the livestock market depends on the type (cattle, sheep, etc.) and number of livestock.
- Area required for various types of livestock is depicted in table 2.5. (optional).

Table 2.5: Area required for various types of livestock

Number of Daily Livestock Supply				Area Required (m <sup>2</sup> )				Area Required			Total Area in (m <sup>2</sup> )
Cattle	Sheep/Goat	Equine	Camel	Cattle	Sheep/Goat	Equine	Camel	Total Livestock(m <sup>2</sup> )	Circulation (m <sup>2</sup> )	Facilities (m <sup>2</sup> )	
500	1000	20	20	(3.5)* 1750	(0.90) 900	(4.5) 90	(4.5) 90	2830	290	1040	4160

Source: - FDRE, Authority for Livestock Market, 1993 E.F.Y

- NB:** i). \*The area required to reserve for each cattle, sheep/goat, equine and camel is 3.5m<sup>2</sup>, 0.90m<sup>2</sup>, 4.5m<sup>2</sup> and 4.5m<sup>2</sup>, respectively
- ii) The area required for circulation should be 10.25% of the actual required livestock area.
  - iii) The area required for facilities should be 36.75% of the actual required livestock area.
  - iv) The area required for other facilities such as administrative offices, balance, toilet, incineration of solid wastes, reservoirs, etc. should not be more than 25% of the total reserved area; and the area required for circulation should not be more than 7% of the total reserved area.

### **Tip to Abattoir site selection (in Activity 11)**

Factors to be considered where there is a need to select a new site for the construction of abattoir / slaughterhouse:

- The abattoir should be located in the periphery of a town/ city;
- It should not be located close to residential houses, schools, churches, public offices, etc.;
- It should be accessible at least with a compacted gravel collector road;
- It should be located at least 5km away from the airport and runways (in the direction of approach and take off);
- It should not be located in the direction of urban future expansion area;
- It is preferable if the slope is about 5%;
- It should have available infrastructures such as water supply, electricity, etc.;
- It should not be near latrines or any other waste disposal system;
- It should not be near a factory from which smoke or dust can contaminate the meat;
- It should have adequate area to accommodate the whole operational facilities required;
- It should be 2 km away from any ranch boundary, a neighboring abattoir and pungent or objectionable odor emanating industries;
- It should be 5 km away from quarantine station; and,
- It should be at least 2 km away from sources of water supply (e.g. deep wells, ponds, lakes, etc.).

A sample rating system for selection of abattoirs is tabulated in table 2.6.

**Table 2.6: Sample for rating suitability of sites abattoirs (the case of Addis Ababa)**

Score*	5 points	20 points	10 points	10points	10points	7points	2points	10 points	6 points	5points	10points	5points	100	Remarks
Name of proposed site	Availability of enough space	Water supply availability	Waste disposal facilities	Road facility	Availability of public transport	The presence of establishment	Wind direction	Flow direction of livestock	Accessibility to animal transport	Location from airport	Facility for livestock market	Availability of telephone, electricity	Total score	

- The score given to each factor has proposed by the committee assigned to select site for a new Abattoir in Addis Ababa. The method to be employed is designed in a way to evaluate each variable by assigning a value (score) proportional to its significance. The value to be given to each factor is subjective and may vary from individual to individual and from group to group. However, the variation should not be significant.

## Tips to Cemetery Site Selection (in Activity 11)

### Factors to be considered in cemetery site selection are:-

- Compatibility:- It should be far from recreation areas, hospital, sport fields, schools, etc;
  - ✓ There should be a buffer zone between cemeteries and other urban activities
- Accessibility:- The site should be accessible to collector or minor arterial roads;
- Topography: - It is preferable if the slope is below 10%. However, in towns/cities where there is a shortage of land, areas with more than 10% slope can be used
- Area: The area required for cemetery during the planning period is determined by death rate, number of followers of major religions and area needed for a single burial (i.e. 2.88m<sup>2</sup>); and
- Other points:-
  - ✓ Cemeteries should be outside the central part of towns;
  - ✓ Cemeteries should not be located in the direction of future expansion areas; and,
  - ✓ If there is an opportunity, it is better to locate cemeteries inside the compounds of worship places.

## Task 2: Proposals and Finalization

**Activity 1: Summarize the overall findings;**

**Activity 2: Identify planning issues and propose planning solutions;**

**Activity 3: Discuss on the results with the planning team and stakeholders;**

**Activity 4: Update the study as per the agreed comments; and**

**Activity 5: Finalize the report and arrange deliverables.**

## Tips to Activity 5 (Task 2)

### Draft report, Graphic and Supportive Documents

- Maps and graphs that should be included in the report are:-
  - ✓ Location map of the influence area with subsequent administrative units/ division with appropriate scale, which gives an insight into location, shape and size of the study area (optional);
  - ✓ Slope and constraint map of the town which shows the development potential and problem areas of the town;
  - ✓ Graph and table depicting total annual rainfall and mean monthly temperature of the town that gives an insight into months with suitable climatic condition for different development activities; and,
  - ✓ Wind rose diagram of the town that helps to identify town wide direction for the location of pollutant industries/activities (optional).
- As regards Slope and Constraints Map, most of the necessary tasks i.e. calculating, classifying, and shading/coloring the different slope categories with standardized colors should be done at office. But some of the constraints should be depicted on base maps during fieldwork by means of field observation and finalized by giving those standardized symbols and/or signs.
- The report should have introductory regional and urban issues, the main part of the report that could be arranged with different units/chapters and different possible arrangements.

## Annexes

### Annex 1: Expansion Area Selection

This task could be conducted before the actual collection of data i.e. during or before base map preparation for the town. The prioritization/phasing of possible expansion areas, however, are part of the planning process.

#### Activities:-

#### Major Activities that have to be performed in expansion area selection

- Get existing Base Map and/or Plan (if available);
- Rapid field assessment and determination of suitable expansion area;
- Get existing population size and growth rate;
- Regional plot size standard;
- Population projection; and,
- Determination of required land for the planning period.

#### Technical criteria checklist for urban expansion/promotion area selection

##### 1. Description of Physical Characteristics

Indicator	Remark
Name of the locality	
Peasant association/ kebele administration	
Existing land use type	
Topography	
Efficiency of drainage	
Constraints (natural/manmade)	
Area extent	

2. Assess availability of physical and social infrastructure

Type	Remark
Electricity	
Road	
Telephone	
Water supply	
Health facilities	
Education facilities	

3. Centrality

4. Compatibility

5. Effect on physical shape of the town (Compactness)

6. Impact on the environment

7. Rural Settlement Pattern/Population Size/Activities

8. Public preference.

## ANNEX 2: Topics and Data Types, Sources and Methods of Data Collection and Planning Implications

### 2.1. Physical Features and Environment

Topics and Data Types	Sources and Method of data collection	Planning Implications
<p><b>Geographical setting of the influence area and urban</b></p> <p><b>Assess the location of the region and the town in absolute and relative terms</b></p> <ul style="list-style-type: none"> <li>☞ Geographical coordinates (optional)</li> <li>☞ The position of a place with reference to important political and geographical units, land marks and/or notable water bodies.</li> </ul>	<p>❖ <b>Key Sources<sup>3</sup></b></p> <ul style="list-style-type: none"> <li>☞ Regional/Zonal Offices of Finance and Economic Development</li> <li>☞ Field observations</li> <li>☞ Atlases (National, Regional and Zonal)</li> <li>☞ GPS readings (firsthand information)</li> </ul>	<ul style="list-style-type: none"> <li>☞ It primarily answers the question where the area under study is located, which in turn gives an important insight into climate, vegetation, soil, etc. conditions;</li> <li>☞ To estimate the area covered by a certain region;</li> <li>☞ Affects the relative advantage of the region and the town in terms of social, economic and political factors;</li> <li>☞ To locate the position of a particular urban center in a global grid and/or with respect to the adjoining geographical features and political units; and for the identification and demarcation of ideal sites for urban development.</li> </ul>
<p><b>Assess size (area) of the town and its influence area</b></p> <ul style="list-style-type: none"> <li>☞ Size of the study area (optional);</li> <li>☞ Area of the project town.</li> </ul>	<p>❖ <b>Key Sources</b></p> <ul style="list-style-type: none"> <li>☞ Regional offices of Finance and Economic Dev't</li> <li>☞ Field observations and measurement</li> <li>☞ Atlases (National, Regional and Zonal)</li> <li>☞ FUPCoB and/or EMA</li> </ul> <p>❖ <b>Key Methods</b></p> <ul style="list-style-type: none"> <li>☞ Reviewing secondary data sources;</li> <li>☞ Measuring from atlases;</li> <li>☞ Reviewing the base map of the town;</li> <li>☞ GIS.</li> </ul>	<ul style="list-style-type: none"> <li>☞ The extent of the area encompassed by a certain geographical unit to some extent determines the variety of natural resource endowment;</li> <li>☞ To identify the total area coverage of an urban center, and the built up area;</li> </ul>

<sup>3</sup> It should be noted that the names of various institutions/organizations from which information could be obtained may be changed through time, and hence, it should be taken into consideration while using this manual as a reference.

<p><b>Assess shape of the town</b></p>	<p>❖ <b>Key Sources</b></p> <ul style="list-style-type: none"> <li>☞ EMA,</li> <li>☞ Zonal offices of Finance and Economic Development,</li> <li>☞ Regional Bureau of Finance and Economic Development,</li> <li>☞ Field observations</li> <li>☞ FUPCoB.</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Referring secondary data sources</li> <li>☞ Adopting from atlases</li> <li>☞ Reviewing the topographic map of the town</li> </ul>	<ul style="list-style-type: none"> <li>☞ To examine the likely interaction and integration existed within the area under study and to forward planning solutions to overcome/minimize if there are any integration problems.</li> <li>☞ To assess the existing settlement pattern and encourage the realization of compact urban development that in turn significantly reduces the cost of physical infrastructure and service delivery, and save agricultural lands from undesirable urban intrusions.</li> <li>☞ Influences intra-urban mobility.</li> </ul>
<p><b>Vegetation and forest resources of the influence region</b></p> <ul style="list-style-type: none"> <li>☞ Climatic-climax vegetation type and spatial distribution;</li> <li>☞ The existing vegetation classification and coverage in relation to climate</li> <li>☞ Level and prominent causes of deforestation and their concomitant environmental effects;</li> </ul>	<p>❖ <b>Key Sources</b></p> <ul style="list-style-type: none"> <li>☞ Regional or zonal Finance and Economic Development Bureaus;</li> <li>☞ Field survey;</li> <li>☞ Ethiopian Mapping Agency;</li> <li>☞ Regional or Zonal Agricultural Bureau.</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Referring secondary data sources;</li> <li>☞ Reviewing topo maps of the region;</li> </ul>	<ul style="list-style-type: none"> <li>☞ To ensure sustainable regional and urban development, modifying (optimizing) the micro-climate, maintaining aesthetic values, reduce the effect of wind induced hazard and dust problem;</li> <li>☞ To suggest mechanisms by which indigenous plant species and unique flora and fauna are conserved;</li> <li>☞ Forest resources provide raw materials to support wood based industries, e.g. wood for timber;</li> <li>☞ To realize sustainable provision of construction materials, industrial wood, fuel wood, recreation</li> </ul>

<ul style="list-style-type: none"> <li>☞ Trends of conservation and utilization;</li> <li>☞ Vegetation map.</li> </ul>	<ul style="list-style-type: none"> <li>☞ Adopting from atlases</li> </ul>	<p>opportunities, wildlife habitat, etc.</p>
<p><b>Wildlife resources of the influence region</b></p> <ul style="list-style-type: none"> <li>☞ Dominant wildlife species including the endemic ones;</li> <li>☞ Animal population;</li> <li>☞ Trends of conservation and utilization;</li> <li>☞ Relevance of the wildlife for tourism;</li> <li>☞ Parks, game reserves, sanctuaries, etc.</li> </ul>	<p>❖ <b>Key Sources</b></p> <ul style="list-style-type: none"> <li>☞ Regional or zonal economic development Bureau</li> <li>☞ Field survey</li> <li>☞ Ethiopia Mapping Agency</li> <li>☞ Regional or zonal Agricultural Bureau,</li> <li>☞ Ethiopian Wildlife Conservation Organization,</li> <li>☞ Tourism Commission,</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Reviewing secondary data sources</li> </ul>	<ul style="list-style-type: none"> <li>☞ To stress the importance of wildlife with respect to aesthetic, education and economic values;</li> <li>☞ To promote access to park or any conservation area;</li> <li>☞ To identify and suggest the means of sustaining endangered species,</li> <li>☞ Implication on tourist facilities and services both on site and nearby urban centers so as to reap the economic benefits.</li> </ul>
<p><b>Soil resources of the influence region</b></p> <ul style="list-style-type: none"> <li>☞ Types and their geographical distribution;</li> <li>☞ Agricultural potentiality (value)</li> <li>☞ Extent (degree) of soil degradation;</li> <li>☞ Soil distribution and degradation Map.</li> </ul>	<p>❖ <b>Key Sources</b></p> <ul style="list-style-type: none"> <li>☞ Regional or zonal economic development Bureau</li> <li>☞ Field survey</li> <li>☞ Ethiopian Mapping Agency</li> <li>☞ Regional or Zonal Agricultural Bureau</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Referring secondary data sources;</li> <li>☞ Adopting from atlases.</li> </ul>	<ul style="list-style-type: none"> <li>☞ To examine the agricultural endowment with respect to soil.</li> <li>☞ To suggest appropriate farming system and conservation measures that should be adopted and/or exercised.</li> </ul>
<p><b>Urban Settlement pattern and Structure</b></p> <ul style="list-style-type: none"> <li>☞ Regional population distribution; <ul style="list-style-type: none"> <li>• Population size classified by urban</li> </ul> </li> <li>☞ Assess the pattern and hierarchy of settlement structures in the region</li> </ul>	<p>❖ <b>Key sources</b></p> <ul style="list-style-type: none"> <li>☞ Regional/Zonal offices of Finance and Economic Development;</li> <li>☞ Central Statistical Agency;</li> <li>☞ Regional, Zonal and Wereda Agricultural Offices;</li> </ul>	<ul style="list-style-type: none"> <li>☞ To assess the degree of burden on natural resources and recommend possible planning solutions;</li> <li>☞ To assess the degree of disparity of urban settlements;</li> <li>☞ To assess the economic, social and political benefits</li> </ul>

<ul style="list-style-type: none"> <li>☞ Identify factors affecting urban settlements</li> </ul>	<ul style="list-style-type: none"> <li>☞ Various regional sectoral offices.</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Reviewing secondary data sources and maps;</li> </ul>	<p>from the settlement of the region and other urban centers.</p> <ul style="list-style-type: none"> <li>☞ To suggest some mechanisms on the spatial arrangement of settlements;</li> <li>☞ To provide an idea towards the future potential settlement areas based on the spatial distribution of population;</li> <li>☞ To assess future growth potential of the project town;</li> <li>☞ To investigate future development trends and options.</li> </ul>
<p><b>Physiographic features of the project town</b></p> <ul style="list-style-type: none"> <li>☞ Assess relief or topographic conditions <ul style="list-style-type: none"> <li>○ Elevation/ altitude</li> <li>○ slope map with appropriate scale at town level</li> </ul> </li> </ul>	<p>❖ <b>Key Sources</b></p> <ul style="list-style-type: none"> <li>☞ Ethiopian Mapping Authority</li> <li>☞ Regional/Zonal offices of Finance and Economic Development</li> <li>☞ Zonal and Wereda Agricultural offices</li> <li>☞ FUPCoB</li> <li>☞ Atlases (National, Regional and Zonal)</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ referring topographic map of the study area</li> <li>☞ reviewing the base map of the town</li> </ul>	<ul style="list-style-type: none"> <li>☞ To undertake land suitability analysis for various urban land uses;</li> <li>☞ To appraise and identify constraints associated with topography such as steep slopes, zone of flooding and water stagnation, areas vulnerable to erosion, etc.</li> <li>☞ To appreciate the impact of topography on infrastructure development, and to forward environmentally sound and economically feasible urban infrastructure development.</li> <li>☞ To recognize specific hazards such as flooding and landslides, erosion, etc.</li> <li>☞ To appraise type of land use and land value.</li> </ul>
<p><b>Drainage system</b></p> <ul style="list-style-type: none"> <li>☞ Type and condition of surface water Drainage basins /catchments/ watershed.</li> </ul>	<p>❖ <b>Key Sources</b></p> <ul style="list-style-type: none"> <li>☞ Regional/Zonal Bureau of Finance and Economic Development</li> <li>☞ Zonal and Wereda Agricultural offices</li> <li>☞ Ministry of Water Resources</li> </ul>	<ul style="list-style-type: none"> <li>☞ To assess the extent of drainage related problems such as erosion, siltation, flood hazard, malaria epidemic and water pollution, etc.</li> </ul>

<ul style="list-style-type: none"> <li>☞ Efforts made to conserve the water resources from being contaminated by urban wastes and the utilization (allocation) of land astride the banks of rivers for compatible activities.</li> </ul>	<ul style="list-style-type: none"> <li>☞ Water, Mines and Energy Bureau of the Region</li> <li>☞ FUPCoB</li> <li>☞ Ethiopian Mapping Agency</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Reviewing secondary data sources</li> <li>☞ Referring the topographic map of the town and the study region</li> </ul>	<ul style="list-style-type: none"> <li>☞ Implications on cost of physical infrastructure development;</li> <li>☞ To identify potential urban agriculture areas particularly horticulture.</li> </ul>
<p><b>Climate</b></p> <ul style="list-style-type: none"> <li>☞ Temperature (minimum, maximum and mean)</li> <li>☞ Rainfall (amount)</li> <li>☞ Humidity (optional),</li> <li>☞ Prevailing wind direction and speed (velocity)</li> <li>☞ Agro-climatic zone</li> </ul>	<p>❖ <b>Key Sources</b></p> <ul style="list-style-type: none"> <li>☞ National Meteorological Services Agency;</li> <li>☞ Regional/Zonal Offices of Finance and Economic Development;</li> <li>☞ Zonal and Wereda Rural and Agricultural Development Offices;</li> <li>☞ Large farms; and,</li> <li>☞ Irrigation Development Projects/Offices.</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Referring secondary data; and,</li> <li>☞ Compiling field observation.</li> </ul>	<ul style="list-style-type: none"> <li>☞ To examine the prevalence of geographical diseases which are associated with temperature, and precipitation such as malaria</li> <li>☞ To assess the degree of comfort of an area and human thermal response to the standard effective temperature.</li> <li>☞ To determine the spacing and density of dwelling units, housing typology, building orientation and extent of green areas reserved during land use planning</li> <li>☞ To decide appropriate site for urban activities that emit pollutants (dust, smoke, smell, noise, etc.), industrial centers, factories, and identification of waste disposal and treatment sites;</li> <li>☞ To take measures for the protection of wind induced hazards</li> </ul>

## 2.2 Physical Infrastructure

Topics and data types	Source and method of data collection	Planning Implications
<p><b>Road</b></p> <ul style="list-style-type: none"> <li>☞ Assess the condition of existing road network for suitability in terms of accessibility and surface condition;</li> <li>☞ Consider sufficient room for pedestrian walkway and bikeway;</li> <li>☞ Types of means of transport in the town;</li> <li>☞ Assess the condition of bus stations with respect to: <ul style="list-style-type: none"> <li>• Location</li> <li>• Area</li> <li>• Available utilities and facilities</li> <li>• Types and number of vehicles</li> </ul> </li> <li>☞ Assess transportation related problems</li> </ul>	<p>❖ <b>Source</b></p> <ul style="list-style-type: none"> <li>☞ Private Transport Associations</li> <li>☞ CSA</li> <li>☞ Traffic Police Office</li> <li>☞ Town Administration</li> <li>☞ Representatives of society</li> <li>☞ Passengers</li> <li>☞ Field observation</li> <li>☞ Base Map of the town (1:5000)</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Questionnaires;</li> <li>☞ Conducting interviews;</li> <li>☞ Community &amp; stakeholders meeting</li> <li>☞ Referring secondary data sources;</li> <li>☞ Compiling field observation.</li> </ul>	<ul style="list-style-type: none"> <li>• To minimize car accidents and congestion;</li> <li>• To propose planning solutions for improved intra-urban transport.</li> </ul>
<p><b>Power supply</b></p> <ul style="list-style-type: none"> <li>☞ Type of service, capacity, service duration, consumption by customer type;</li> <li>☞ Street lighting;</li> </ul>	<p><b>Source</b></p> <ul style="list-style-type: none"> <li>☞ Ethiopian Electric Power Corporation (EEPCO);</li> <li>☞ EEPCO, Regional Offices;</li> <li>☞ EEPCO, Local Offices;</li> <li>☞ CSA;</li> <li>☞ Base Map of the town (usually 1:5000);</li> </ul>	<ul style="list-style-type: none"> <li>☞ To indicate the location of substation and high-tension lines and propose suitable land use and buffer zone to minimize risks.</li> <li>☞ To identify the electric capacity to attract investments</li> </ul>



## 2.3. Linkage Studies

<p><b>Urban-rural Linkage</b></p> <ul style="list-style-type: none"> <li>☞ The Type and degree of interaction of the town with its hinterland in terms of: <ul style="list-style-type: none"> <li>✓ Administrative</li> <li>✓ Physical infrastructure; (Identify means of transport and communication that facilitate linkage)</li> <li>✓ Municipal and market services;</li> </ul> </li> <li>☞ Threats and opportunities of urban-rural linkage;</li> <li>☞ Urban service extension, urban expansion and activities that affect the rural environment;</li> </ul>	<p>❖ <b>Source</b></p> <ul style="list-style-type: none"> <li>☞ Central Statistics Agency;</li> <li>☞ Regional/Zonal Offices of Finance and Economic Development and other offices</li> <li>☞ Zonal and Wereda Agricultural Offices</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Revise secondary data sources and maps;</li> <li>☞ Questionnaires;</li> <li>☞ Experts Opinion;</li> <li>☞ Community &amp; stakeholders meeting.</li> </ul>	<ul style="list-style-type: none"> <li>☞ To suggest/recommend mechanisms that can facilitate linkages;</li> <li>☞ To prioritize areas so as to strengthen their linkage;</li> <li>☞ To identify transport and communication facilities that can facilitate linkages;</li> <li>☞ To envisage possible mechanisms for avoiding threats and maximize opportunities of rural-urban linkage;</li> </ul>
<p><b>Urban-Urban Linkage</b></p> <ul style="list-style-type: none"> <li>☞ Trend and level of urbanization</li> <li>☞ Areas of urban-urban linkages; <ul style="list-style-type: none"> <li>✓ Administrative</li> <li>✓ Physical infrastructure</li> <li>✓ Municipal and/or Administrative</li> </ul> </li> <li>☞ Threats and constraints of urban-urban linkage;</li> </ul>	<p>❖ <b>Sources</b></p> <ul style="list-style-type: none"> <li>☞ Regional and Zonal Offices of Finance and Economic Development and other offices</li> <li>☞ Municipalities</li> </ul> <p>❖ <b>Methods</b></p> <ul style="list-style-type: none"> <li>☞ Reviewing secondary data sources;</li> <li>☞ Questionnaires</li> <li>☞ Compiling expertise views/opinion</li> </ul>	<ul style="list-style-type: none"> <li>☞ To identify threats and opportunities of urban-urban linkage</li> <li>☞ To suggest/recommend mechanisms that could help to facilitate urban-urban interaction;</li> </ul>

## 2.4. Constraints and Expansion Area

<p><b>Natural and man-made constraints</b></p> <ul style="list-style-type: none"> <li>☞ Natural constraints are related to topography, like excessively high and/or low gradient, watercourses and gullies, geological hazards, etc.;</li> <li>☞ Man made constraints which among others include substation and high tension lines, airport, military camps, quarry (mining) sites, buffer zones, etc.</li> <li>☞ Slope and constraint map.</li> </ul> <p><b>Selection of urban expansion area (urban promotion area)</b></p> <ul style="list-style-type: none"> <li>☞ Physical factors that involve the nature of the terrain, slope and soil conditions;</li> <li>☞ Socio-economic conditions which include population density, historical (archaeological) sites, suitability for agriculture, types of crop grown (perennial and annual crops);</li> <li>☞ Environmental condition referring to the presence of ecologically sensitive (fragile) areas;</li> <li>☞ Availability of infrastructure, ample size area and harmony with the already built up (urbanized) area;</li> <li>☞ The presence of incompatible activities such as military camps; and,</li> <li>☞ Public preference.</li> </ul>	<p><b>❖Key Sources</b></p> <ul style="list-style-type: none"> <li>☞ FUPCoB and/or EMA;</li> <li>☞ Field observations;</li> <li>☞ Town Administration;</li> <li>☞ Public meetings;</li> <li>☞ Local Agricultural and Rural Development Offices;</li> <li>☞ Local Environmental Protection Offices; and,</li> <li>☞ Immediate rural community.</li> </ul> <p><b>❖Method</b></p> <ul style="list-style-type: none"> <li>☞ Reviewing base map of the town;</li> <li>☞ Questionnaires;</li> <li>☞ Compiling field observation;</li> <li>☞ Compiling public views;</li> <li>☞ Interviews,</li> <li>☞ Community &amp; stakeholders meeting; and,</li> <li>☞ Reviewing secondary data.</li> </ul>	<ul style="list-style-type: none"> <li>☞ To avoid and/or mitigate natural and man induced hazards as well as to resolve land use incompatibility.</li> <li>☞ To reduce the adverse consequences of urban expansion in the surrounding rural areas;</li> <li>☞ To protect good agricultural lands from undesirable urban intrusion.</li> <li>☞ To identify and select ideal sites for urban development that promotes environmentally sound and socio-economically acceptable (justifiable) urban physical expansion;</li> <li>☞ To ensure harmonized development between the urban centers and their immediate hinterland.</li> </ul>
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## 2.5. Municipal Services

<p><b>Market</b></p> <p>❖ <b>General Market and Gultit</b></p> <ul style="list-style-type: none"> <li>▪ Location <ul style="list-style-type: none"> <li>- Centrality</li> <li>- Accessibility</li> <li>- Compatibility</li> </ul> </li> <li>▪ Topography/slope</li> <li>▪ Size (m<sup>2</sup> or hectare)</li> </ul>	<p><b>Source</b></p> <ul style="list-style-type: none"> <li>☞ Municipality</li> <li>☞ Wereda Agricultural Office</li> <li>☞ Zonal Offices of Finance and Economic Development</li> <li>☞ Traders</li> <li>☞ Market attendees</li> <li>☞ Field observation</li> <li>☞ Base Map of the town/city (usually 1:5000)</li> </ul> <p><b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Compiling field observations;</li> <li>☞ Conducting interviews;</li> <li>☞ Reviewing secondary data sources;</li> <li>☞ Compiling public views;</li> <li>☞ Questionnaires</li> <li>☞ Community &amp; stakeholders meeting</li> </ul>	<ul style="list-style-type: none"> <li>☞ To assess the existing services and problems, and propose planning solutions to have adequate market services for local commodities and foster transaction.</li> <li>☞ To select ideal market site.</li> <li>☞ To magnify the commercial activities of the town through land use planning.</li> </ul>
<p>❖ <b>Livestock Market</b></p> <ul style="list-style-type: none"> <li>▪ Location <ul style="list-style-type: none"> <li>-Accessibility</li> <li>-Compatibility</li> </ul> </li> <li>▪ Topography</li> <li>▪ Area/size</li> <li>▪ Major flow direction (s) of livestock</li> </ul>	<p>❖ <b>Source</b></p> <ul style="list-style-type: none"> <li>☞ Municipality;</li> <li>☞ Wereda Agricultural Office;</li> <li>☞ Prominent cattle traders and raisers;</li> <li>☞ Zonal Offices of Finance and Economic Development;</li> <li>☞ Field observation;</li> <li>☞ Base Map of the town/city (usually 1:5000); and,</li> <li>☞ Butcheries.</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Compiling field observation;</li> <li>☞ Questionnaires;</li> <li>☞ Conducting interviews;</li> <li>☞ Referring secondary data sources;</li> <li>☞ Compiling public views.</li> </ul>	<ul style="list-style-type: none"> <li>☞ To assess the existing services and problems, and propose planning solutions.</li> <li>☞ To select an ideal livestock market.</li> </ul>

<p><b>Abattoir</b></p> <ul style="list-style-type: none"> <li>• Location <ul style="list-style-type: none"> <li>-Accessibility</li> <li>-Compatibility</li> </ul> </li> <li>• Area of the abattoir</li> <li>• Wind direction</li> </ul>	<p>❖ <b>Source</b></p> <ul style="list-style-type: none"> <li>☞ Municipality;</li> <li>☞ Wereda Health Office;</li> <li>☞ National Meteorological Services Agency;</li> <li>☞ Environmental Protection Authority;</li> <li>☞ Topographic map of the town/city (usually 1:5000);</li> <li>☞ Field observation; and,</li> <li>☞ Wereda Agricultural Offices.</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Questionnaires;</li> <li>☞ Compiling field observations;</li> <li>☞ Conducting interviews;</li> <li>☞ Compiling public views;</li> <li>☞ Reviewing secondary data sources</li> </ul>	<ul style="list-style-type: none"> <li>☞ To assess the impact of abattoir on environmental sanitation and propose planning solutions;</li> <li>☞ To propose ideal site/location that considers technical appraisal;</li> <li>☞ To reduce wastes generated by the abattoir and/or make feasible the economic utilization, for instance, producing manure from waste byproducts.</li> </ul>
<p><b>Cemetery and religious centers</b></p> <ul style="list-style-type: none"> <li>• Location <ul style="list-style-type: none"> <li>-Compatibility</li> <li>-Accessibility</li> </ul> </li> <li>• Aesthetic impact</li> <li>• Area</li> <li>• Number of followers of major religions</li> <li>• Request for a plot of land for a new cemetery</li> <li>• The number, size and spatial distribution of existing cemeteries.</li> </ul>	<p>❖ <b>Source</b></p> <ul style="list-style-type: none"> <li>☞ Municipality;</li> <li>☞ Representatives of the town;</li> <li>☞ Followers of respective religions;</li> <li>☞ Field observation; and,</li> <li>☞ Base Map of the town (usually 1:5000).</li> </ul> <p>❖ <b>Method</b></p> <ul style="list-style-type: none"> <li>☞ Questionnaires;</li> <li>☞ Compiling field observation and public views</li> <li>☞ Revising secondary data sources</li> </ul>	<ul style="list-style-type: none"> <li>☞ To assess the existing condition and propose planning solutions</li> <li>☞ To locate cemeteries at appropriate sites.</li> </ul>

**Annex 3: Data Collection Formats for Basic Plan Preparation**

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**በከተማ ደረጃ የሚሞላ**

**ክፍል አንድ፡ የመብራት አገልግሎትን በተመለከተ<sup>4</sup>**

1. በከተማው የኤሌክትሪክ አገልግሎት ማግኘት የጀመረበት ዘመን፣ የኃይሉ ምንጭ /ዓይነት እና /አቅም/ አገልግሎቱን ያገኙ የነበሩ ተጠቃሚዎች ብዛት፣ ቢገሰጽ?
2. ከተማው አሁን የኤሌክትሪክ ኃይል የሚያገኘው ከየት ነው?
3. አሁን ባለው የኤሌክትሪክ ኃይል ፍጆታ /ኪ.ሎ ዎት/ መሠረት በከተማው ሰሚናረው ሕዝብ ምን ያህል ተጨማሪ ኃይል ያስፈልጋል /በኪ.ሎ ዎት/? ያለውን ፍላጎትስ አሁን ባለው የማመንጨት አቅም ማሟላት ይቻላል?
4. የኤሌክትሪክ ኃይል ማክፋፈያ ጣቢያ/ካለ/ የሚገኝበት ቦታ ከከተማዋ ዕድገትና ክሌሎች መመዘኛዎች አንፃር አመቺ ነው? ወደ ማክፋፈያ ጣቢያው የሚገባው የኃይል መጠን በኪሎዎት ቢገሰጽ፣ የማክፋፈያ ጣቢያው ከፍተኛ አቅም ስንት ሚጋ ዋት ነው? ስከተማዋ የሚክፋፈላቸውስ?
5. በከተማው የመብራት አገልግሎት የሚያገኙ ቀበሌዎች ዝርዝርና የደንበኞች ብዛት

ቀበሌ	የደንበኞች ብዛት በአገልግሎት ዓይነት /200_ ዓ.ም						
	የመኖሪያ	የንግድ	የኢንዱስትሪ	የመንግሥት ተቋማት	ሕዝባዊ ድርጅቶች	ሌሎች	ድምር
01							
02							

6. በከተማው የመብራት አገልግሎት ሰማግኘት የተመዘገቡ አገልግሎት ፈሳጊዎች ብዛት በቀበሌ፤

ቀበሌ	የተመዘገቡ አገልግሎት ፈሳጊዎች በአገልግሎት ዘርፍ						
	የመኖሪያ	የንግድ	የኢንዱስትሪ	የመንግሥት ተቋማት	ሕዝባዊ ድርጅቶች	ሌሎች	ድምር
01							
02							

<sup>4</sup> በአጠቃላይ በዚህ ማንኛውም ውስጥ በየምዕራፉ በሚቀመጡት መጠይቆች እና ቼክሊቶች እንደመነሻ በመጠቀም አጥኚው አካል ወይም ባለሙያ የአካባቢውን ተጨባጭ ሁኔታ ግምት ውስጥ በማስገባት አሻሽሎ መጠቀም ይጠበቅበታል።

7. በከተማው ውስጥ የመብራት አገልግሎት የሚያገኙ አካባቢዎች /ሠፈሮች/ በቀበሌዎች፤
8. በከተማው ውስጥ የጋደል እጥረት የሚያጋጥሟቸው አካባቢዎች /ሠፈሮች/ በቀበሌዎች፤
9. በከተማው ውስጥ ስንት የመንገድ መብራቶች /ፖሎች/ አሉ? ----- ፖሎቹ በከተማው ውስጥ ስንት ኪ/ሜትር ርዝመት ይሸፍናሉ? ----- ማዘጋጃ ቤት ስመንገድ መብራት ፍጆታ በወር በአማካይ ምን ያህል ብር ይከፍላል? ----- አማካይ ወርሃዊ ፍጆታው /በኪ.ዋት/ ምን ያህል ነው? -----
10. በከተማው ውስጥ ተጨማሪ ትራንስፎርመር የሚያስፈልጋቸው ቀበሌዎች /አካባቢዎች የትኞቹ ናቸው? በድርጅታቸው ስማዘጋጃ ቤት የቀረበ የትራንስፎርመር /ፖል መትከያ ቦታ ጥያቄ ካስ አካባቢውና የትራንስፎርመሩ አቅም የፖሎች ብዛት፣ አንዲሁም የሚሸፍናቸው ቀበሌዎች፣ አካባቢዎች ወዘተ. ቢገለጹ?
11. የከተማውን የመብራት አገልግሎት በተመለከተ የሚጠቀሱ ዋና ዋና ችግሮችን እና ሲሰጡ የታሰቡ የመፍትሄ ሃሳቦችን ቢገልጹልን? በከተማው ነገን ላይ ቢካተቱ ይጠቅማሉ የሚባሉ ሃሳቦች ካሉ ቢጠቀሱ?

**ክፍል ሁለት: የስልክ አገልግሎትን በተመለከተ፤**

1. በከተማው የስልክ አገልግሎት የተጀመረበት ዘመን? ----- የስልኩ ዓይነት/ደረጃ -----
2. አሁን በከተማው የሚገኘው የአገልግሎት ዓይነት ----- የተጀመረው? --/ዓ.ም./
3. በከተማው የስልክ አገልግሎት የሚያገኙ ቀበሌዎች በደንበኞች ዓይነት፤

ቀበሌ	የደንበኞች ብዛት በአገልግሎት ዓይነት /200_ ዓ.ም/							
	የመኖሪያ	የንግድ	የኢንዱስትሪ	የመንግሥት ተቋማት	ሕዝባዊ ድርጅቶች	አዲስ የተመዘገቡ	ሌሎች	ድምር
01								
02								

4. በከተማው ስልክ ቤቱ የሚገኝበት ቦታ ከአመቺነት አንፃር ምን ይመስላል? /በስፋት፣ በማዕከላዊነት፣ ወዘተ./ /ስፋቱ በሜ.ስክዌር ይገለጻል/
5. በከተማው ውስጥ የሚገኙ የደንበኞች ብዛት /ከ2000-200----

ዘመን	የደንበኞች ብዛት በአገልግሎት ዓይነት							
	የመኖሪያ	የንግድ	የኢንዱስትሪ	የመንግሥት ተቋማት	ሕዝባዊ ድርጅቶች	ሌሎች	ድምር	
200_								
200_								

6. በከተማው የስልክ አገልግሎት ስርጭት ሁኔታ፣ መሬት ውስጥ የተቀበረ መስመር ርዝመት እና አካባቢው ቢገለጽ?
7. በከተማው በአብዛኛው ብዙ ጥሪዎች የሚስተናገዱት ከየትኞቹ ሀ/ ከኢትዮጵያ ከተሞች ጋር ነው?

ስ/ ከውጪ ሀገሮች /ከተሞች/ አህጉሮች ጋር ነው?

8. ከተማው ከስልክ አገልግሎት በተጨማሪ የሚያገኛቸው የአገልግሎት አይነቶች የትኞቹ ናቸው? /በ ✓ ምልክት ያሳዩን/፤ሀ/ ቱሴግራም ---ስ/ ቱሴክስ ---ሐ/ ፋክስ --- መ/ ሞባይል---ሠ/ ሴሎች /ደገስፀ/
9. በከተማው ውስጥ ተጨማሪ የማክፋፈያ ሣጥን ስመትክል በድርጅቱ የቀረበ የቦታ ጥያቄ ካስ ቦታው የኬብል ካፓሲቲ እና የሚሸፍናቸውን አካባቢ ቢገልፁ?
10. በከተማው የስልክ አገልግሎት ስማገኘት የተመዘገቡ ጠያቂዎች ብዛት በአገልግሎት ዓይነት እና ከተመዘገቡት ውስጥ አገልግሎት ያገኙት ብዛት ቢገልጹ?
11. በከተማ ውስጥ የስልክ አገልግሎትን በተመለከተ የሚታዩትን ዋና ዋና ችግሮች ቢገልፁ? መፍትሄዎችስ?

**ክፍል ሦስት: የፖስታ አገልግሎትን በተመለከተ፤**

1. በከተማው የፖስታ አገልግሎት የተጀመረው መቼ ነው? ----- የነበረው ደረጃስ? -----
2. በአሁኑ ሰዓት በከተማው ያሰው የፖስታ አገልግሎት ዓይነት ----- ደረጃው ከፍ ያለበት ዘመን ቢገልጹ? -----
3. በከተማው የሚገኘው የፖስታ አገልግሎት የሚሰጣቸው ዋና ዋና የአገልግሎት ዓይነቶች ቢገልጹ?
4. በከተማው ፖስታ ቤት የተከራዩ ሣጥኖች ብዛት በባለቤት አይነት በዘመን ቢገልጹ፤
 

	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>
የግል	-----	-----	-----	-----	-----
የድርጅት	-----	-----	-----	-----	-----
የመንግሥት	-----	-----	-----	-----	-----
5. በከተማው ውስጥ አዲስ የፖስታ ሣጥን ስመክራዊት ጥያቄ ያቀረቡ ያመልካችሁ ብዛት፤ ----- ከተመዘገቡት ውስጥ አገልግሎት ያገኙ ብዛት -----፤
6. አብዛኛዎቹ ፖስታዎች የመጡት ከየትኞቹ
 

ሀ/ የኢትዮጵያ ከተሞች ነው? /በቅደም ተከተል ቢገልጹ/?

ለ/ ከየትኞቹ የውጪ ሀገር ከተሞች ነው /ወይም አህጉር/?
7. ፖስታ ቤቱ የሚገኝበት ቦታ አመቺነት ምን ይመስላል? ስወደፊት የታሰበ የቦታ ስውጥ ካስ ቢገልጹ?
8. ከተማው ውስጥ ስንት የፖስታ መሰብሰቢያ ሣጥኖች አሉ? /ብዛታቸውና የሚገኙባቸው አካባቢዎች/ቀበሌዎች/ ቢገልፁ?
9. በከተማው በፖስታ አገልግሎት በኩል ያጋጠሙ ዋና ዋና ችግሮች እና የመፍትሔ ሣሳቦች ቢገልፁልን?

**ክፍል አራት: የትራንስፖርት አገልግሎትን በተመለከተ፤**

ሀ/ የመነሣሪያ አገልግሎት፤

1. በከተማው ውስጥ መነሣሪያ ካስ የሚያስተዳድረው/ባለቤቱ ማን ነው? ----- የመነሣሪያው ደዘታ መጠን ስፋት በሚትር ስኩዌር ይጠቀስ?



3. የትራንስፖርት አገልግሎቱ ክፍያ ከአገልግሎቱ አንፃር ተመጣጣኝ ነው? ካልሆነ ስምን? ይህ የክፍያ ሁኔታ በሚኖረው እንቅስቃሴ ላይ ምን ችግር አስከትሏል? የሕዝቡን ፍላጎት ከማርካት አንፃር ያሰውን ሁኔታ ቢገልፁልን?

4. በአስተኛና መካከለኛ የሕዝብ ማመሳሰሻ አገልግሎት ዘርፍ የታዩት ዋና ዋና ችግሮች እና መፍትሄ ሲሆኑ የሚችሉ ሃሳቦች /የታወቁ ዕቅዶች/ ቢገልፁ?

2. የክፍተኛ የሕዝብ ማመሳሰሻ ተሽከርካሪዎች ስምሪት ካለ፤

2.1 በስምሪት አገልግሎት በቀን የሚሠማሩ ተሽከርካሪዎች ብዛት በመነሻና መድረሻ -----

2.2 ከላይ በተገለጸው የስምሪት መጠን የተጓጓዙት መንገደኞች ብዛት /በተሽከርካሪ የመጫን አቅም ስሌት/ ቢገለጽ . 200\_ **9.ም/፤**----

2.3 በክፍተኛ የሕ/ማመሳሰሻ ዘርፍ ከ200\_ **9.ም/፤** እስከ..... የተጓጓዘው ሕዝብ ብዛት ቢገለጽ?

2.4 የክፍተኛ የሕ/ማመሳሰሻ አገልግሎት የህብረተሰቡን ፍላጎት ከማሟላት አንፃር ያሰው ተጨባጭ ሁኔታ ቢገለጽ?

2.5 በክፍተኛ የሕ/ማመሳሰሻ አገልግሎት በኩል ያታዩ ዋና ዋና ችግሮች እና መፍትሄ ሲሆኑ የሚችሉ /የታወቁ ዕቅዶች ወዘተ.... ቢገልፁ?

### ሐ. በጭነት ማመሳሰሻ ትራንስፖርት ዘርፍ የሚሞላ፤

1. በከተማው ውስጥ በጭነት ማመሳሰሻ ዘርፍ የተሠማሩ/የተደራጁ ማህበራት ካሉ ስማቸው፣ የተሽከርካሪዎች ብዛት እና የመጫን አቅም ቢገለጽልን?

2 ከከተማው ጋር ክፍተኛ ትስስር ያላቸው አካባቢዎች /ከተሞች የትኞቹ ናቸው /በሸቀጥ ስውውጥ/ በቅደም ተከተል በደረጃ ቢያስቀምጧቸው?

1. ----- 2 -----3. ----- 4. -----5. -----  
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3. ከከተማውና ወደ ከተማው በአብዛኛው የሚመጡና የሚገቡ ዋና ዋና የሸቀጥ ዓይነቶች በመነሻና መድረሻ ቢገልፁልን?

4. በከተማው የጭነት ማመሳሰሻ ተሽከርካሪዎች ማቆሚያ ቦታ አለ? አመቺነቱን ጭምር ቢገልፁልን? ከሌለ ሰውደፊቱ ምን ያህል አስፈላጊ እንደሆነ ቢገለጽ?

5. በከተማው በአማካይ በቀን ምን ያህል የጭነት ማመሳሰሻ ተሽከርካሪ ይስተናገዳል? በየትኞቹ ቀናት? ስወደፊት የተጠየቀ የተሽከርካሪ ማቆሚያ ቦታ ጥያቄም ካስ ቢገለጽ?

6. በጭነት ማመሳሰሻ አገልግሎት ዘርፍ የታዩ ዋና ዋና ችግሮች እና የመፍትሄ ሃሳቦች ቢገለጹ?

**መ. ጋራዥ፣ ጉሚስታ፣ ነዳጅ ማደያ**

1. በከተማው ውስጥ ስንት ጋራዥ -----

ጉሚስታ -----

ነዳጅ ማደያዎች ----- አሉ?

ከአገልግሎቶቹ ፍላጎት /ተፈላጊነት አንፃር ያለው ስርጭትና ብዛት በቂ ነው ይላሉ?

2. እነዚህ አገልግሎቶች የሚገኙባቸው ቦታዎች አመቺነት ምን ይመስላል? /ከአካባቢ ጽዳት፣ ከተጠቃሚው ፍላጎት፣ ከከተማዋ የወደፊት ስድገት፣ ወዘተ አንፃር

3. ከነዚህ አገልግሎቶች ጋር በተያያዘ የተፈጠረ ችግር ካስ ቢጠቀሱ? ስወደፊት ምን መፍትሄ ተፈልጎልዎት?

**ሠ. የውስጥ ስውስጥ መንገዶች**

1. የከተማውን መንገዶች በተመለከተ የተሠራ ካርታ ወይም ጥናት ካስ ቢገለጽ?

2. በከተማው ውስጥ የሚገኙት መንገዶች ደረጃና ዓይነት እንዲሁም ስፋትና ርዝመት በሠንጠረዥ ቢገለጽ?

የመንገድ ዓይነት /ደረጃ/	ርዝመት/በኪ.ሜ	ስፋት/በሜትር/	የተፋሰስ መስመር ካሰው/በኪ.ሜ/ርዝመቱ	አገልግሎት የጀመረበት ዘመን
አስፋልት				
የተጠረገ/ጠጠር				
ሴሎች				
ድምር				

3. በአሁኑ ወቅት በከተማው ውስጥ የሚገኙ መንገዶች የከተማውን የትራፊክ እንቅስቃሴ በብቃት ያስተናግዳሉ? የማያስተናግዱ ከሆነ ምክንያቱ ቢገለጽ?

4. የከተማው የውስጥ መንገዶች ስርጭት ምን ይመስላል? /ተመጣጣኝ፣ በአንድ ቦታ የተከማቹ፣ የትራፊክ መጨናነቅ የሚፈጥሩ .. /

5. የከተማው የውስጥ ስውስጥ መንገዶች በተቋማትና በነዋሪው አስፈፈር ላይ ያላቸው ተጽእኖ እና በእንቅስቃሴ ላይ የሚፈጥሩት ችግር ካስ ቢገለጽ? /ስምሳሌ በመንግሥትም ሆነ በግለሰብ አገልግሎት ሰጪ ድርጅቶች የቦታ ምርጫ ወ.ዘ.ተ/

6. የከተማው የመሬት አቀማመጥ፣ የአየር ንብረት እና የአፈር ዓይነት በመንገዶች ስራ ላይ የፈጠረው ችግር ካስ ቢገለጽ?
7. ዋና ዋናዎቹ የከተማው የአንቅስቃሴ መስመሮች መንገዶች የትኞቹ እንደሆኑ ቢገለጽልን /የሚያገኟቸው ሠፈሮችን ጭምር/፣
8. በከተማው ተጨማሪ መንገዶችን ለመስራት ወይም ለመጠገን /ለማሻሻል/ የተያዘ ዕቅድ ካስ ቢገለጽ?
9. የከተማውን መንገዶች በተመለከተ የሚታዩ ዋና ዋና ችግሮችንና የመፍትሄ ሃሳቦችን ቢገልጹልን?
10. መንገድን በተመለከተ በሚሰራው የከተማዋ ፕላን ውስጥ ቢካተት ይጠቅማል የምትሉት ካስ ቢጠቀስ?

**ክፍል አምስት፣ የትራፊክ ገጽታን በተመለከተ፤**

1. በከተማው ውስጥ በአብዛኛው የትራፊክ አደጋ የሚከሰትባቸው ቦታዎች ወይም መንገዶች ተለይተው ቢገለጹልን?
2. በከተማው ውስጥ ያሉትን የትራንስፖርት አይነቶች በዓይነትና በባለቤት ብዛታቸውን በሠንጠረዥ /200\_ 9.ም-200\_ 9.ም/፣ ቢገልጹልን /ጋራ፣ ብስክሌት፣ ታክሲ፣ ሚኒባስ፣ ሞተርሳይክል፣ የግል፣ የመንግሥት፣ የድርጅት/
3. አብዛኛው ሰው በከተማው ውስጥ አዘውትሮ የሚጠቀመው የትራንስፖርት ዓይነት ምንድን ነው? /በቅደም ተከተል/ ቢገለጽ?
4. በከተማው ውስጥ ስትራፊክ አደጋ መንስኤዎች የሆኑትን ዋና ዋና ምክንያቶች ቢገልጹልን?
5. ከተማው የትራንስፖርት አገልግሎት ተጠቃሚነቱ እያደገ ነው? ካልሆነ ለምን? መፍትሄውን ቢጠቀሙን?
6. በከተማው የደረሰው የትራፊክ አደጋ ብዛት በዓይነት እንዲሁም የደረሰው ጉዳት በሕይወትና በገንዘብ ሲተመን ምን ያህል እንደሆነ በሠንጠረዥ ቢሞሱልን /1998-2003/

የደረሰ አደጋ	መስኪያ	ጊዜ					
		1998	1999	2000	2001	2002	2003
ሀ/ የአደጋው ዓይነት							
1. በሕይወት ላይ	በቁጥር						
2. በንብረት ላይ	በብር						
ለ/ የአደጋው ደረጃ							
1. ከባድ	በቁጥር						
2. መካከለኛ	በቁጥር						
3. ቀላል	በቁጥር						

7. በአማካይ ከተማውን አቋርጠው የሚያስፈልጉ ተሽከርካሪዎች ብዛት በቀን ስንት ነው? በከተማው አድራሻው የሚያስፈልጉ /አገር አቋራጭ አውቶብስ/ የጭነት/ ስንት ናቸው?

8. የከተማውን የትራንስፖርት እንቅስቃሴ ገጽታ ቀደም ካሉት ዓመታት ጋር አነጻጽረው ቢገልጹልን?

9. በከተማው የሚታዩ የትራፊክ አደጋ ስመቀነስ የሚያስችሉ የመፍትሄ ሃሳቦችን ወይም ወደፊት በዕቅድ የተደዘዙ ስራዎችን ቢገልጹልን?

**ክፍል ስድስት: የጋራ አገልግሎትን በተመለከተ፤**

1. በከተማው ያሉት የጋራዎች ብዛት በዓይነት፣ በዘመን ቢገለጽ፤

	1999	2000	2001	2002	2003
ሀ/ የሰው ማጓጓዣ	-----	-----	-----	-----	-----
ለ/ የዕቃ ማጓጓዣ	-----	-----	-----	-----	-----

2. በከተማው ጋራ ተጠቃሚ የሚበዛው በየትኛው አካባቢ እንደሆነ ቢገልጹልን? ስለእድ ሰው የሚጠየቀው የክፍያ መጠን ከርቀት ጋር ተደደዘ ቢገለጽ?

3. ስጋሪዎች እንደ መነሻና መድረሻ የተወሰኑ ክልሎችን በአካባቢ ስም /በቀበሌ/ ቢገልጹልን? ከዚህ ጋር ተደደዘ የጋራ ማቆሚያ ቦታዎችን አመቺነት /ከጽዳት/ ከትራፊክ መጨናነቅ/ ከሌሎች ምክንያቶች አንጻር/ ቢገልጹልን?

4. በከተማው ስጋራ አገልግሎት ዝግ የተደረጉ መስመሮች ካሉ ቢገልጹልን? ስምን?

5. በከተማው የጋራ አገልግሎት ማግኘት ያልቻሉ አካባቢዎችን /በቀበሌ፣ በሠፈር/ ከነምክንያቱ ቢገልጹልን?

6. በከተማው ከጋራ አገልግሎት ጋር በተደደዘ ያጋጠሙ ችግሮች እና ሰወደፊት ሲወሰዱ የታወቁ መፍትሄዎች ቢገልጹልን?

**ክፍል ሰባት: በማዘጋጃ ቤት/ከተማ ወይም ቀበሌ አስተዳደር ጽ/ቤት የሚሞላ፤**

**ሀ. የቁራ አገልግሎት፤**

1. በከተማው የቁራ አገልግሎት ካሉ አገልግሎቱ መስጠት የተጀመረበት ዘመን መቼ ነው? -----  
 ----በከተማው ውስጥ ስንት ቁራ አሉ? -----

በቁራው/ቁራዎች በቀን የሚታረደው መጠን/በቁጥር ቢገልጹልን/?

2. በአሁኑ ሰዓት ቁራው ያለበት አካባቢ አመቺነት ምን ይመስላል? አገልግሎቱ ከከተማው ዕድገት ጋር እና ከህዝቡ ፍላጎት ጋር ይጣጣማል ወይ?
3. በቁራው ሰዕርድ የሚቀርቡት እንስሳት የሚገኙት ከየት ነው? በአብዛው የሚመጡበት ቦታ ቢገለጽ? ቁራው ያለበት አካባቢ ከከተማ ገበያው ጋር ሲነፃፀር ርቀቱ ወይም ቅርቡ ምን ይመስላል? የቁራውና የገበያው አቀማመጥ ሁኔታ የሚያመጣው ችግር ወይም የሚሰጠውን ጥቅም ቢገልጹልን?
4. ቁራው ፍላጎት ቆሻሻ የሚያስወግደው በምን መልኩ ነው? ደረቅ ቆሻሻ እንዴት ይወገዳል?
5. በቁራው አገልግሎት አሰጣጥ ላይ የታዩ ዋና ዋና ችግሮችና የታቀዱ የመፍትሄ ሃሳቦች ካሉ ቢገለጹ?
6. ሰወደፊት የቁራውን አሠራርና አገልግሎት አሰጣጥ ለማሻሻል የታሰበ ነገር ካለ ቢገልጹልን?
7. ከቁራ ውጭ እርድ የሚከናወን ከሆነ እንዴት እንደሆነ ሁኔታውን ቢገልጹልን?
8. በከተማው ውስጥ የቁራ አገልግሎት ከሌለ ሰወደፊት ለማቋቋም የተጠየቀ ወይም የታሰበ ቦታ ካለ ቢገልጹልን?

**ሰ. የገበያ ሁኔታን በተመለከተ**

1. በከተማው ስንት የገበያ ቦታዎች አሉ?  
 የሸቀጥና ሌሎች ----- ስፋት /በሜትር ስኩዌር/ ----- የሚገኝበት ቀበሌ -----  
 የእንስሳት ----- ስፋት /በሜትር ስኩዌር/ ----- የሚገኝበት ቀበሌ -----
2. በከተማው ዋና ዋና የገበያ ቀናት ስንት ናቸው? ----- የትኞቹ ቀናቶች እንደሆኑ ቢገለጹ?
3. በገበያ ቀናት ወደ ከተማው የሚመጡ ገበያተኞች ዋና ዋና አቅጣጫዎችና መነሻ ከተሞች/አካባቢዎች ቢገለጹ?  
 ሀ/ ከሰሜን አቅጣጫ የሚመጡ፤ -----  
 ለ/ ከደቡብ ” ” -----  
 ሐ/ ከምሥራቅ ” ” -----  
 መ/ ከምዕራብ ” ” -----
4. የገበያ ቦታን በተመለከተ በከተማው የታዩ ዋና ዋና ችግሮች ቢገለጹልን፤ /መፍትሄዎች ጭምር/
5. በአጎራባች አካባቢዎች የሚገኙ ዋና ዋና የገበያ ቦታዎች/ከተሞች እና የገበያ ቀናቶች በዝርዝር ቢገለጹ?
6. የሸቀጥ ገበያው ስህንድ ገበያ አስፈላጊ የሆኑ ነገሮችን አሟልቷል? /ስምሣሌ:- መጠሰያ፣ መደብ፣ መጋዘን፣ መጠዳጃ ቤት፣ ወዘተ.../ ወደፊት እነዚህን ሁሉ ለማሟላት ቢያስፈልግ በቂ ቦታ አለ?

7. የሸቀጥ ገበያው ይዘታ አመቺነት፣ ማዕከላዊነት እና የአገልግሎት ብቃት ምን ይመስላል? ከህዝቡ ብዛትና ከተጨማሪ የገበያ ቦታ ፍላጎት አንፃር መስፋፋት የሚችል ነው ወይ? በተጨማሪ የሚያስፈልጉ የገበያ ቦታዎች ካሉ ቢገልጹልን?

ሐ. የክብት ገበያ

1. በከተማው የክብት ገበያ አለ? ካለ መቼ ተቋቋመ? በየትኛው የከተማው ክፍል ይገኛል? ብዙ ክብቶች ከሚመጡበት አቅጣጫ ጋር የተሰማማ ነውን?
2. የክብት ገበያው ይዘታ ከቅርበት፣ ከአመቺነት፣ ከጽዳት፣ ወዘተ. አንፃር ምን ይመስላል?
3. የተከሰሰው ቦታ ስፋት ከክብቶች ብዛት እና ከነዋሪው ሕዝብ ፍላጎት ጋር የተጣጣመ ነው?
4. የክብት ገበያው በአካባቢው የፈጠረው ችግር ካለ ቢገለጽ፣ /ለምሳሌ ሰከተማው ንፅሕና ጉድለትና የትራፊክ መጨናነቅ/ ወዘተ.. ለወደፊት የታሰበ የቦታ ስውጥ ካለም ቦታው እና ሲሰውጥ የታሰበበት ምክንያት **ቢገልጹልን?**

መ. የአምነት /የአምልኮ/ ቦታዎች

1. በከተማዎ ስንት ቤተክርስቲያኖችና መስጊዶች አሉ? የሚገኙበት ቦታ/ቀበሌ ቢገልጹልን፣ ምዕመናኑ/ሕብረተሰቡ በይዘታዎቹ ላይ ይስማማሉ ወይ? ካልተስማሙ ስምን?
2. የአምልኮ /የጸሎት/ ስፍራዎች ይዘታ ከከተማዎ ዕድገት እና ከነዋሪዎች ፍላጎት አንፃር በቂ ነው? ለወደፊቱ የተጠየቀ የአምልኮ /የጸሎት/ ቦታዎች ካሉ አካባቢዎቹን ቢገልጹልን?
3. ከአምልኮ ሥፍራዎች ጋር በተያያዘ መልኩ የታዩ ወይም የተፈጠሩ ችግሮች ካሉ ቢገልጹልን? የመፍትሄ ሃሳብ ተብሎ የተያዙ ካሉም ቢጠቁሙን?

ሠ. የመቃብር ቦታዎች

1. በከተማው ውስጥ የሚገኙት የቀብር ቦታዎች ይዘታ ተስማሚ ነው? ከከተማዎ ዕድገት፣ ሲኖር ከሚገባው የመሬት አጠቃቀም፣ ከህብረተሰቡ ፍላጎት አንፃር ቢገልጹልን?
2. በከተማዎ ተስፋፋ ወይም ተጨማሪ የቀብር ቦታ ፍላጎት/ጥያቄ አለ ወይ? ካለ በየትኛው የከተማው ክፍል ሲሆን ታስቧል? ስምን?
3. የቀብርን ቦታ በተመለከተ የቀብር ሥፍራ የሌለው የኃይማኖት ክፍል አለ? ስምን?
4. የቀብር ቦታን በተመለከተ ሲካተቱ የሚገባቸው ሃሳቦች ካሉ ቢገልጹልን?

ረ. የከተማው አከታተምና ዕድገት ሁኔታ፤

1. ከተማው የተቆረቆረበት ዘመን ----- ዓ.ም.
2. ከተማው የነበረው ይዘታ /ስፋት/ ----- ኪ.ሜ.ስኩዌር፣ አሁን ያለው ስፋት ----- --ኪ.ሜ.ስኩዌር፣
3. ከተማዎ የተቆረቆረበት ዋና ምክንያት /ዓሳማ/ ቢገለጽ?

4. ከተማዎ እሁን የምትገኝበት ሁኔታ ምን ይመስላል? በይበልጥ በምን ማዕከልነት እያገለገለች ነው? /በአስተዳደር፣ በንግድ፣ በቴሌኮም፣ በኃይማኖት፣ በትራንስፖርት፣ ወዘተ.. /
5. የከተማው የመሬት አቀማመጥ ምን ይመስላል? የአየር ንብረቱስ ሁኔታ?
6. ከተማው አየተስፋፋ ያለበት አካባቢ አመቺ ነው ደላሱ? ስምን? አመቺ ካልሆነ በየትኛው አቅጣጫ ቢያደግ ይመረጣል? ስምን?
7. የከተማው እና የአካባቢው የመሬት አቀማመጥና የአየር ንብረት በከተማው ዕድገት ላይ ምን ተጽእኖ አሳድሯል? ችግሮች ካሉ ተብራርተው ቢገለጹና መፍትሄያቸውን ጭምር ቢጠቀሙን?
8. በከተማው ውስጥ ለውስጥ ወይም በቅርበት የሚገኝ ወንዝ ካለ የወንዙን ስም፣ የገባር ወንዞችን ስምና የሚፈሱበትን አቅጣጫ፣ በከተማው ዕድገት ላይ ያስከተሉት ችግሮች /በጤና፣ በመሠረተ ስማት ግንባታ፣ በመኖሪያ አካባቢ ብክለት፣ ጉርፍ፣ የአፈር መሸርሸር ወዘተ.. ተብራርቶ ቢገለጹን?
9. በከተማው ከተፈጥሮ አቀማመጥ ጋር የተያያዙ ዋና ዋና ችግሮች ምንድናቸው? /ጉርፍ፣ ናዳ፣ ወዘተ.. /
10. በከተማው ውስጥ የሚያስፈፈው ወንዝ ስምን አገልግሎት ሲውል ይችላል? አካባቢውን ስምን ሥራ ቢውል ይጠቅማል? ስምን?
11. በከተማው ውስጥ ስንት ቀበሌዎች አሉ? አከላለሱ ምንን መሠረት ያደረገ ነው? የክልል ስውጥ ተደርጓል ወይ? መቼ? ስምን? ለመደፈትስ? ስምን?
12. የአገልግሎት ተቋማት በብዛት የሚገኙበት ቀበሌ የትኛው ነው? ስምን? ለመደፈትስ ምን ታስቧል?
13. ከተማው ውስጥ /አካባቢ በአብዛኛው ንፋስ የሚነፍሰው ከየት ወዳት አቅጣጫ ነው? / ጠዋትና ማታ ተብሎ ተሰይቶ ቢገለጹ? /
14. ከተማውና በአካባቢው የሚገኙ ዋና ዋና ጉብታዎች፣ ተራራዎች፣ ኮረብታዎችና ሜዳዎች ስም በሠንጠረዥ ቢገለጹ?

ተ.ቁ	የተራራ/ኮረብታ/ ሜዳ ስም	ክፍታ /ከባህር ጠለል በላይ በሚትር	የሚያዋስናቸው ከተሞች/መንደሮች	አስተያየት
1	ተራራ /ጋራ/			
2	ኮረብታ /ጉብታ/			
3	ሜዳ			

አስተያየት በሚለው ስር ደን የለበሱ፣ የተሸረሸረ፣ አስታማኝ ወዘተ በማለት የአካባቢውን ገጽታ በማሳየት ይገለጹልን?

## ክፍል ስምንት:-የከተማ የውሃ አገልግሎትን በተመለከተ

1. በከተማው የንፁህ መጠጥ ውሃ አገልግሎት ስርጭት ሁኔታ ምን ይመስላል?

ቀበሌ	የደንበኞች ብዛት በአገልግሎት ዓይነት /2003 ዓ.ም/							በከተማው የሚገኙ የውኃ ማደያዎች ብዛት	የተመዘገቡ አገልግሎት ፈላጊዎች ብዛት	አማካይ የከተማው የውሀ ፍጆታ መጠን
	የመኖሪያ	የንግድ	የኢንዱስትሪ	የመንግስት ተቋማት	ህዝባዊ ድርጅቶች	ሌሎች	ድምር			
01										
02										
03										
04										
05										
06										
07										
08										
09										
10										
ድምር										

2. ከተማው የንፁህ መጠጥ ውሃ ተጠቃሚ የሆነው መቼ ነው? \_\_\_\_\_

3. ለከተማው ውሀ አቅርቦት የሚውለው ውሃ ከየት ከየት ይገኛል?

ሀ. ጥልቅ ጉድጉዋድ

የጉድጉዋዱ ስም	የሚገኘበት ቦታ	የተቆፈረበት ዘመን	የጉድጉዋዱ ጥልቀት	የክርስ ምድር ውሀ ከፍታ	የምርት መጠን

ለ. ምንጭ

የምንጩ ስም	የሚገኘበት ቦታ	የተሰራበት ዘመን	የምርት መጠን	እሁን ያለበት ሁኔታ

ሐ. ወንዝ

የወንዙ ስም	የተሰራበት ዘመን	የምርት መጠን	አሁን ያለበት ሁኔታ

4. የውሀ ስርጭት ሁኔታ

ሀ. የውሀ መስመር ሁኔታ

የመስመር መጠን	ርዝመት/በኪሜ/	አስተያየት

5. የውሃ ምርት ሁኔታ

ሀ. ባለፉት 5 ዓመታት ወርሃዊ የውሃ ምርት መጠን ምን ያህል ነበር?

ወራት	የውሃ ምርት መጠን በተለያዩ የበጀት ዓመታት				
	1999	2000	2001	2002	2003
ሐምሌ					
ነሐሴ					
መስከረም					
ጥቅምት					
ህዳር					
ታህሳስ					
ጥር					
የካቲት					
መጋቢት					
ሚያዝያ					
ግንቦት					
ሰኔ					
ድምር					

6. ባለፉት 5 አመታት የውሃ ፍጆታ መጠን ምን ያህል ነበር?

ወራት	የውሃ ፍጆታ መጠን በተለያዩ የበጀት ዓመታት				
	1999	2000	2001	2002	2003
ሐምሌ					
ነሐሴ					
መስከረም					
ጥቅምት					
ህዳር					
ታህሳስ					
ጥር					
የካቲት					
መጋቢት					
ሚያዝያ					
ግንቦት					
ሰኔ					
ድምር					

7. የከተማው የውሃ ታሪፍ ምን ያህል ነው?

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8. የውኃ ጥራትን በተመለከተ

8.1 የከተማው የውሃ ጥራት በምን ዓይነት ሁኔታ ላይ ይገኛል?

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8.2 ውሃው ከመሰራጨቱ በፊት ምን ዓይነት ህክምና ይደረግለታል?

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8.3 የውሃው ጥራትስ በምን ያህል ጊዜ ምርመራ ይካሄድለታል?

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9. በውሀ አገልግሎት ዙሪያ ያሉ ዋና ዋና ችግሮች ምን ምን ናቸው?

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10. የከተማውን የውሃ አገልግሎት ለማሻሻል የተዘጋጀ የ3/5 ዓመት ስትራቴጂ ካለ ቢገለፅልን?

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## References

1. Ministry of Works and Urban Development (2006): Integrated Urban Infrastructure and Services Planning Manual, Addis Ababa.
2. National Urban Planning Institute, Physical and Environmental Affairs Department (2004): Training of Data Collection Guideline for Physical and Environmental Research; Addis Ababa.
3. National Urban Planning Institute, Physical and Environmental Affairs Department (2004): Training of Data Analysis Guideline for Physical and Environmental Research; Addis Ababa.

## **CHAPTER THREE**

### **3. URBAN ENVIRONMENTAL ASSESSMENT**

#### **3.1. BACKGROUND**

The term environment encompasses wider concepts when it is dealt in its broader sense, however, this manual tries to cover the basic environmental issues that need to be addressed in preparation of urban plans in general and basic plan in particular.

The objective of this chapter of the manual is to guide professionals who will be engaged in the study of urban environment as part of preparation of basic plans for small towns. Users are not expected to take this manual as hard and fast rule to be followed to conduct the study, rather, the professional can add or skip over issues he/she believed should be included or omitted based on the ground reality of the study town.

This chapter covers three phases: the first phase shows the preparatory work that will be done prior to going to field work while the second phase outlines the data collection task by mentioning the data to be collected, indicating possible data sources and methods of data collection. The third phase indicates how the collected data will be analyzed and what type of recommendations will be given for addressing environmental issues. Moreover, some questionnaires and checklists are annexed to supplement the manual.

## 3.2 PHASE ONE: PREPARATORY WORK

### Purpose:

- To focus the study and do the forthcoming pertinent job efficiently and effectively

### Outputs:

- Checklists;
- Questionnaires;
- Base map;
- Field equipment;
- Field work schedule; and,
- Background assessment.

**Time Required:** 5-7 days

### **Task 1: Preparation of Questionnaires and Checklists**

#### **Activity 1: Preparing a checklist**

- Identify the major areas of study; and,
- Decide what should be included in the study.

#### **Activity 2: Designing questionnaires**

#### **Activity 3: Acquire soft and hard copy of the questionnaires and checklists**

### **Task 2: Preparation of base map**

#### **Activity 1: Selecting the scale of the map**

- List down what to be mapped;

- Identifying the scale of the map required for mapping the issues; and,
- Acquire hard and soft copy of the maps.

### **Task 3: Preparation of field work program**

- List down the activities to be accomplished from day one to the end of the field trip within the budgeted time of field work.

### **Task 4: Conducting background assessment**

#### **Activity 1: Collecting information about the general condition of the town**

- Geographical location and geological setting;
- Population size;
- Current status of the town; and,
- Gathering available written documents.

### 3.3 PHASE TWO: DATA COLLECTION

**Purpose:**

- To identify realistic solutions, with proper consideration of facts on the ground, real needs and available resources.

**Outputs:**

- Filled questionnaires
- Minutes of meetings
- Notes
- Copied documents
- Maps
- Photographs
- Samples (optional)

**Time Required:** 6-10 days

#### **Task 1: Identification of Data to be Collected**

In this document, the main data required for conducting comprehensive study is presented; however, they can be condensed depending on the availability of information, ground reality and the size of the town in question.

#### **Activity 1: Outlining the major areas of the study**

The basic data required for conducting environmental study includes (See also Annexes 1 and 2):

**a. Solid waste**

- Type and nature of solid wastes generated;
- Major composition of solid wastes;
- Major sources of solid wastes;
- Average per capita solid waste generation rate;
- Methods of solid waste collection and transportation;
- Number of solid waste storage facilities, their volume, and spatial distribution provided that communal collection system is adopted;

- Employees engaged in solid waste management;
- Private sectors and associations engaged in solid waste management;
- Available equipments for solid waste management;
- Parameters used for selection of solid waste disposal site (rainfall, temperature, prevailing wind direction, humidity, sunshine hour, nature of rock and soil, groundwater level, flow direction of ground water, topography etc);
- Role of different actors (NGOs, informal sector, government);
- Recycling and reusing mechanisms;
- Budget allocated for solid waste management;
- Inter-municipal cooperation for solid waste management; and,
- Localized policy guidelines, strategies, rules and regulations related to solid waste management.

**b. liquid Wastes:**

- Availability of toilet facilities by type;
- Mechanisms of collection, transportation, disposal, recycling, and treatment of liquid waste;
- Type and number of liquid waste generating activities and establishments;
- Type and composition of liquid wastes generated from different sources;
- Number of public toilets and their spatial distribution;
- Budget allotted for liquid waste management;
- Inter-municipal cooperation on liquid waste management;
- Condition of the existing waste disposal site, if available; and,
- Parameters used for selection of liquid waste disposal site (rainfall, temperature, nature of rock and soil, groundwater level, flow direction of ground water, etc).

**c. Air pollution (optional)**

- Identify major source of indoor and outdoor air pollution
  - ✓ outdoor
    - Industrial
    - Dust
    - Vehicles
  - ✓ Indoor
    - Availability of kitchen facility
    - Type of energy source and use
    - Ventilation of housing

**d. Environmental risks**

- Identifying sensitive environmental issues typical to the study town
  - ✓ Water pollution
  - ✓ Soil pollution
  - ✓ Flooding
  - ✓ Land degradation
  - ✓ Landslide
  - ✓ Earthquake (see Figure 1 - annexed)
- Mapping areas under environmental degradation risks
- Extent of the problem
- Causes of the problem
- Affected group

**e. Urban greenery**

- Coverage of urban green area
- Type of greenery
- Distribution of green area
- Availability of nursery and other facilities required for promoting greenery

## **Task 2: Collecting the Required Data**

The data required for conducting the study could be collected using different methodologies and techniques. The quality of data and efficiency of data collection depends on the application of the appropriate methodologies.

### **Activity 1: Gathering written documents**

- Published and unpublished materials, which directly or indirectly deal with the town under study. Moreover, materials that deal with urban development could be helpful in substantiating assumptions pertaining to the development of the town. Such materials could be books, journals, periodicals, newspapers, thesis, memoirs, etc.

### **Activity 2: Conducting Discussion, Holding Meetings with Stakeholders and Concerning Bodies, Dispatching Questionnaires**

- Holding discussion with experts and officials working on environmental issues;
- Holding meetings with stakeholders and concerning bodies;
- Distributing the prepared questionnaires for offices and persons who are believed will give reliable information on the environmental issues under consideration and collecting it back (see Annex 2).

### **Activity 3: Observing, measuring, testing and taking pictures**

- Observation, taking notes and mapping what is observed in a study town and its influence area concerning waste management and environmental risks;
- Measuring some parameters and conducting simple field tests on the type, composition and density of waste and degree of environmental risk;
- Collecting data by taking pictures that shows the waste management system of the study town and areas in risk of environmental degradation.

### **Tips to Task 2: Sources of data**

- Commonly, environmental data could be obtained from
  - ✓ Ministry of Mines & Energy;

- ✓ National Meteorological Services Agency;
- ✓ Environmental Protection Authority;
- ✓ Ministry of Water Resources;
- ✓ NGOs & Consultants;
- ✓ Field observation;
- ✓ Environment related departments of respective Municipalities;
- ✓ Regional/Zonal/Wereda level environment related Bureaus/Departments; and,
- ✓ Private sectors engaged in waste management.

**Tips to Task 2: Environmental data sheet**

List of existing problem	Location	Population affected	Specification (magnitude)	Causes
Pollution of ground water				
List of environmental threats				

### 3.4 PHASE THREE: ANALYSIS and INTERPRETATION

#### Purpose:

- To ensure that the recommendations, proposals, strategies and projects will be formulated with thorough knowledge of the issue.
- To respond to causes rather than symptoms, deal with the problem in context and consider potentials, opportunities, threats and weaknesses.

#### Output:

- Discussion which shows current situations, trends, dynamics, opportunities, potentials, threats, strengths, weaknesses with respect to the issues under study.

**Time Required:** 15-20 days

#### **Task 1: Organizing the Data**

After the data have been collected, they have to be organized in such a way that they will be systematically exploited and analyzed.

#### **Activity 1: Compilation, aggregation and reconciliation of data obtained from different sources**

- Compiling the data on the basis of topics to be discussed concerning environment;
- Aggregate similar and related data;
- Reconcile data obtained from different sources (field observation, questionnaire, discussion, etc) on the same issue/topic.
  - ✓ Verifying reliability, consistency and authenticity of data

#### **Task 2: Analyzing the Data**

#### **Activity 1: Analyze situations, trends and dynamics**

- Describe the current situation of waste management
  - ✓ Type of waste being generated by analyzing the data obtained from
    - Visual observation of the waste;
    - Simple field tests;
    - Distribute questionnaires; and
    - Laboratory analysis (for detailed projects).

- ✓ Ways of waste collection
- ✓ Ways of waste transportation
  - Vehicle, animal, human, etc
  - Their quality, capacity, efficiency, etc.
- ✓ Ways of waste disposal
- Analyze what waste management trends and dynamism do exist in the town across time horizon.
- Developing tabular and graphic representation of environmental data.
- Compare the situations and trends in local area with national and international trend and standards pertaining to waste management and environmental risk (if any).

**Activity 2: Analyze gaps, degree of the problem, causes and impact**

- Analyze what gap really exist as the current situation is compared with the demand and/or standard of the service
  - ✓ Estimate how much waste is being and will be generated in the town
    - Estimation could be made by taking average per capita generation rate
  - ✓ Estimate and/or calculate how much waste is being collected and disposed
  - ✓ Show the gap between the amount being generated and collected
- Indicate at what level the threats/risks are and how they are affecting the people
  - ✓ Example- water pollution
    - Indicate the chemistry of polluted water (if data is available) and indicate how the content goes beyond the standard
    - If data is not available, describe the effects caused by pollution of water
- Identify the causes of each environmental problems in the town
- Indicate the level of the environmental resources
  - ✓ Coverage of forest and green area, water body, etc and their environmental value
    - Per capita coverage of green area
    - Green area gap or requirement with respect to the standard

### Tips to Task 2: Methods of solid waste collection

- i. **Communal collection**:-a system of collection in which individuals bring their waste directly to a central point from which it is collected. Householders discharge their wastes at predetermined locations containing some form of communal storage facilities and refuse collection vehicles visit these sites at frequent intervals e.g. once or twice a week.
- ii. **Block collection**:- a refuse collection vehicle travels at predetermined route at prescribed intervals usually every two or three days and stops at selected location, where a bell is sounded and house holders discharge their waste.
- iii. **Curbside collection**:-is a collection of compostable, recyclable, or trash at the edge of a sidewalk in front of a residence or shop. The collection vehicle collects bins, bags and other containers of refuse which are deposited at the curbside at fixed intervals usually two specific days in a week, when collection takes place.
- iv **Door-to-door collection**:- the collection crew enters each premise, takes out the container and sets it back after emptying the waste in to collection vehicle

### Tip to Task 2: Methods of solid waste disposal

1. **Sanitary landfill**: - an engineered method of disposing of solid wastes on land in a manner that protects human health and environment.  
- It is more appropriate in large urban centers of Ethiopia where significant amount of solid wastes may be generated within a day.
  2. **Open dump**: - an unplanned “Landfill” that incorporates few of the characteristics of a controlled landfill. There is typically no leachate control, no access control, no cover, no management, and there is involvement of many waste pickers. It should be noted that some of the factors applied to sanitary landfill could be considered in open dump sites that are used in small towns of the country.
  3. **Incineration**: - the process of burning solid waste under controlled conditions, to reduce its weight and volume and often to produce energy. From cost point of view energy requirement, skilled personnel, etc, the use of incinerators seems impractical in the towns/ cities of Ethiopia in the foreseeable future.
  4. Other techniques include the “five Rs” these are **Reduce, Reuse, Recover, Recycle**, and **treat and dispose of Residue**.
- N.B.** An urban center could select and use any of these methods that suit it depending up on its capacity, resource, etc.

### **Task 3: Interpretation of Analytical Outputs**

**Activity 1: Explaining what the analytical figures represent and mean with respect to standards (if there are any)**

**Activity 2: Conducting SWOT analysis for environmental issues**

**Activity 3: Select the criteria needed for selection of the intended waste disposal type**

**Activity 4: Select the site ( if needed)**

**Activity 5: Draw conclusions**

- Present the problems and resources with map (if it is manageable)

**Activity 6: Recommendations**

- Indicate what to be made to minimize and/or control environmental problems;
- Indicate ways for utilizing environmental resources; and,
- Indicate ways for creating livable environment in the town.

#### **Tips to Task 3: Activities 3 and 4**

Factors to be considered in sanitary landfill site selection should among others include the following:

- i. It should be located at economic travel distance for vehicles (30 minutes travel distance);
- ii. It should be located less than 2 kms from a suitable main road;
- iii. It should be accessible by a paved road;
- iv. It should be located opposite to the main prevailing wind direction;
- v. It should not be located on high or seasonally high water table lands (i.e. swampy and marshy areas);
- vi. It should not be located on flood plain or areas exposed to flooding;
- vii. It should not be located on ground water recharge and surface water catchments areas for water supply schemes; and,
- viii. It should be located at least 5 kms away from an airport/runway in the direction of approach and take-off.

## Annexes

### Annex 1: ENVIRONMENTAL ASSESSMENT (URBAN LEVEL)

<p><b>Relationship between the urban land use and environment</b></p> <ul style="list-style-type: none"> <li>☞ Relationship between land use and transportation;</li> <li>☞ Relationship between land use (existing and future) and environmental protection;</li> <li>☞ Identify different land features and natural factors, and indicate their merits and demerits for urban development;</li> <li>☞ Identifying future expansion/development area;</li> <li>☞ Identify activities and services that could threaten the environment; and,</li> <li>☞ Identify natural and man made constraints that guide (affect) different land use types.</li> </ul>	<p>❖ <b>Key Sources:</b></p> <ul style="list-style-type: none"> <li>☞ Regional Finance and Economic Development Bureaus;</li> <li>☞ Field survey;</li> <li>☞ NGOs &amp; Consultants;</li> <li>☞ Field observation and measurement;</li> <li>☞ Atlases;</li> <li>☞ Professional associations;</li> <li>☞ EPA and Regional or local environmental related offices;</li> <li>☞ Regional Mines, Energy and Water Resources Bureaus; &amp;</li> <li>☞ Municipality.</li> </ul> <p>❖ <b>Methods:</b></p> <ul style="list-style-type: none"> <li>☞ Reviewing of existing documents &amp; maps;</li> <li>☞ Direct observation;</li> <li>☞ Mapping and transects;</li> <li>☞ Informal or guided interviews, Questionnaire, etc.</li> </ul>	<p><b>Planning Implications</b></p> <ul style="list-style-type: none"> <li>☞ To recommend appropriate types of land uses;</li> <li>☞ To recommend appropriate housing and population densities;</li> <li>☞ To indicate appropriate zoning that ban urban development in specific areas of the city such as greenbelts and green ways, and open spaces;</li> <li>☞ To protect fragile lands/ecologically sensitive areas;</li> <li>☞ To indicate impacts of squatter settlements on the environment;</li> <li>☞ To encourage improved land management urban areas; &amp;</li> <li>☞ To encourage coordination among various concerned bodies for issues that transcends the study area.</li> </ul>
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<p><b>Development and Management of Urban Green Area and Open Spaces</b></p> <ul style="list-style-type: none"> <li>☞ Identify the location, size, type, character, ownership and management of open spaces/green areas;</li> <li>☞ Assess the accessibility and centrality of parks;</li> <li>☞ Current status and use of green areas/open spaces; and,</li> <li>☞ Cultural and aesthetic aspects.</li> </ul>	<p>❖ <b>Sources:</b></p> <ul style="list-style-type: none"> <li>☞ Institute of Biodiversity;</li> <li>☞ FUPCoB/EMA</li> <li>☞ EPA;</li> <li>☞ NGOs &amp; Consultants;</li> <li>☞ Field observation; etc.</li> </ul> <p>❖ <b>Method:</b></p> <ul style="list-style-type: none"> <li>☞ Reviewing of existing documents &amp; maps;</li> <li>☞ Direct observation;</li> <li>☞ Mapping and transects;</li> <li>☞ Informal or guided interviews;</li> <li>☞ Questionnaire; and,</li> <li>☞ Compiling of field observation.</li> </ul>	<ul style="list-style-type: none"> <li>☞ To indicate appropriate green areas/open spaces in the proposed land use plan;</li> <li>☞ To locate appropriate urban green areas/open spaces to create comfortable living environment;</li> <li>☞ To enhance citizens' participation and enforce legislative and planning aspects in management and maintenance of open space and urban green development; and,</li> <li>☞ Respect cultural and aesthetical aspects when developing open space and urban green areas.</li> </ul>
<p><b>Industrial development and the urban environment</b></p> <p><b>* Type of industry</b></p> <ul style="list-style-type: none"> <li>☞ Compatibility with adjacent land uses and vulnerable natural resources;</li> <li>☞ Factors for the siting of industries;</li> <li>☞ Waste management system of respective industries;</li> <li>☞ Type, nature and amount or volume of raw materials used; &amp;</li> <li>☞ Other major environmental and socio-economic impacts associated with industrial development; etc.</li> </ul>	<p>❖ <b>Sources:</b></p> <ul style="list-style-type: none"> <li>☞ Ministry of Mines &amp; Energy;</li> <li>☞ National Meteorological Services Agency;</li> <li>☞ EPA;</li> <li>☞ Ministry of Industrial and Trade;</li> <li>☞ Ministry of Water Resources;</li> <li>☞ Ministry of Rural &amp; Agricultural Development;</li> <li>☞ Geological Survey of Ethiopia;</li> </ul>	<p><b>Planning Implication</b></p> <ul style="list-style-type: none"> <li>☞ To assist in the selection of Industrial sites/ zones;</li> <li>☞ To examine the degree of industrial pollution and waste; &amp;</li> <li>☞ To suggest sustainable industrial development.</li> </ul>

	<ul style="list-style-type: none"> <li>☞ NGOs &amp; consultants;</li> <li>☞ Field observation and measurement;</li> <li>☞ Professional associations; etc.</li> <li>☞ FUPCoB/EMA</li> </ul> <p>❖ <b>Methods:</b></p> <ul style="list-style-type: none"> <li>☞ Reviewing of existing documents &amp; maps;</li> <li>☞ Mapping and transects;</li> <li>☞ Informal or guided interviews</li> <li>☞ Focused group discussion;</li> <li>☞ Questionnaire; and,</li> <li>☞ Compiling field observation.</li> </ul>	
<p><b>Waste management</b></p> <p><b>Solid waste:</b></p> <ul style="list-style-type: none"> <li>☞ Types and nature of solid wastes generated;</li> <li>☞ Major sources of solid wastes;</li> <li>☞ Average per capita solid waste generation rate;</li> <li>☞ Methods of solid waste collection and transportation;</li> <li>☞ Number of solid waste storage facilities, their volume, and spatial distribution provided that communal collection system is adopted;</li> </ul>	<p>❖ <b>Sources:</b></p> <ul style="list-style-type: none"> <li>☞ Ministry of Mines &amp; Energy;</li> <li>☞ National Meteorological Services Agency;</li> <li>☞ EPA;</li> <li>☞ Ministry of Water Resources;</li> <li>☞ NGOs &amp; Consultants;</li> <li>☞ Field observation;</li> <li>☞ Professional associations; etc.</li> </ul>	<p><b>Planning Implication</b></p> <ul style="list-style-type: none"> <li>☞ To conserve ecologically sensitive areas from being contaminated by waste through appropriate waste management system;</li> <li>☞ To Identify poor sanitation areas, improper waste disposal sites and their impacts on health, aesthetics, and environment &amp; propose solutions;</li> <li>☞ To determine amount of solid waste generated and propose appropriate storage, collection, transportation and disposal</li> </ul>