



# Participatory Land Use Planning — Training Manual

November 2020

**Rediet Girma**

*Independent consultant, Hawassa University,  
Hawassa, Ethiopia*

**Wolde Mekuria**

*International Water Management Institute  
(IWMI)*

**Anna Tengberg**

*Stockholm International Water Institute (SIWI)*

**Cryton Zazu**

*Stockholm International Water Institute  
(SIWI)*



Stockholm International Water Institute  
Linnégatan 87A, Box 101 87  
100 55 Stockholm  
SWEDEN



International Water  
Management Institute



*This material is prepared under “The Ethiopian Land and Water Governance Program”, a project jointly implemented by the International Water Management Institute (IWMI) and Stockholm International Water Institute (SIWI).*

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# List of Acronyms

<b>AUC-ECA-AfDB</b>	African Union Commission (AUC), Economic Commission for Africa (ECA) and African Development Bank (AfDB)	<b>PRA</b>	Participatory Rural appraisal
<b>CAP-NET</b>	International Network for Capacity Building	<b>PLUP</b>	Participatory Land Use Planning
<b>CRV</b>	Central Rift Valley	<b>REDD+</b>	Reducing Emissions from Deforest- ation and Forest Degradation
<b>DEM</b>	Digital Elevation Model	<b>RWB</b>	Regional Water Bureau
<b>EIA</b>	Environmental Impact Assessment	<b>RLAUP</b>	Rural Land Administration and Use Proclamation
<b>EPE</b>	Environmental Policy of Ethiopia	<b>RUSLE</b>	Revised Universal Soil Loss Equation
<b>FAO</b>	Food and Agricultural Organization	<b>RVLB</b>	Rift Valley Lakes Basin
<b>FDRE</b>	Federal Democratic Republic of Ethiopia	<b>RVLBA</b>	Rift Valley Lakes Basin Authority
<b>FLR</b>	Forest and Landscape Restoration	<b>RVLBHC</b>	Rift Valley Lakes Basin High Council
<b>GIRD</b>	Generation Integrated Rural Development	<b>SIWI</b>	Stockholm International Water Institute
<b>GIS</b>	Geographic Information System	<b>SLM</b>	Sustainable Land Management
<b>GIZ</b>	German Agency for Inter- -national Cooperation	<b>SNNPR</b>	Southern Nations Nation- alities People Region
<b>GWP</b>	Global Water Partnership	<b>SWC</b>	Soil and Water Conservation
<b>GTZ</b>	German Technical Cooperation Agency	<b>UNDP</b>	United Nations Development Programme
<b>HPR</b>	House of Peoples' Representatives	<b>UNESCO</b>	United Nations Educational, Scien- tific and Cultural Organization
<b>FIG</b>	International federation of Surveyors	<b>UNECASRO-EA</b>	United Nations Economic Commission for Africa, Eastern Africa Sub-region Office
<b>IWMI</b>	Integrated Water Management Institute	<b>USAID</b>	United States Agency for Inter- national Development
<b>IWRM</b>	Integrated Water Resource Management	<b>WASH</b>	Water, Sanitation and Hygiene
<b>LAU</b>	Land Administration and Use	<b>WSS</b>	Water Supply and Sanitation
<b>LCCS</b>	Land Cover Classification System	<b>WWD</b>	Wereda Water Desk
<b>LE</b>	Land Evaluation	<b>WWAP</b>	World Water Assessment Programme
<b>LLPLUP</b>	Local Level Participatory Land Use Planning		
<b>LRP</b>	Land Resource Planning		
<b>LULC</b>	Land Use and Land Cover		
<b>LUP</b>	Land Use Planning		
<b>MoANR</b>	Ministry of Agriculture and Natural Resources		



# Introduction

The training material is aimed at introducing and institutionalizing participatory land use planning (PLUP) at village and landscape levels in the central Rift Valley Lakes Basin (RVLB), Ethiopia. It will enable local communities to use their land and water resources in a way that leads to improved and sustainable agricultural production, and better living conditions for all people, including women and children. The training manual is designed to give water and land resources management practitioners skills to engage and involve all relevant stakeholders in the planning and implementation process and to integrate sectoral development efforts for improved management of natural resources at the village and landscape scales. The training manual provides a set of modules and sessions (see section 1.4) which could be presented in a three-day training course.

## 1.1. Objectives

The principal aim of the training is to build the capacity of agricultural, land and water resource management experts working at district and village levels. The training will help participants to:

- know the technical requirements for completing land use plans and their implementation.
- understand the contribution of PLUP to sustainable land use and water resources management.
- acquire skills to encourage stakeholders to self-organise and take collective action to overcome the problems associated with the existing limited land resources.
- understand the importance and influence of policy frameworks and institutional arrangements in land use planning (LUP).
- ensure active participation throughout the planning process and facilitate multi-level and multijurisdictional planning.

## 1.2. Why the course material

This training material provides guidance to water and land resources management practitioners on how to implement local and landscape levels PLUP. It provides methodological guidance required to effectively engage local-level actors in the central RVLB in PLUP. The manual is based on insights gained from a thorough review of literature and several case studies in the RVLB. The manual will help the course participants to understand PLUP processes at the local level and its role in addressing land and water use related challenges.

## 1.3. Target audience

The training manual is intended for land and water resources management practitioners working at district and village levels, and local communities in the central RVLB, Ethiopia. Local-level PLUP team members include representatives from the Kebele administration, development agents (DAs), youth associations, women associations, health extension workers, community elected elders, religious leaders, farmers, foresters, pastoralists and other local communities.

## 1.4. The structure

The manual is made up of five modules:

- Module 1:** presents common PLUP terminology and principles, tools used, the different PLUP levels, its common stages and requirements for impact monitoring.
- Module 2:** discusses the legal and policy frameworks linked with PLUP and land and water governance in Ethiopia. It also discusses implications for managing the covid-19 pandemic at local level.
- Module 3:** outlines the PLUP in a stepwise manner at different levels (local and basin) and describes the different tools supporting the facilitation processes including participatory mapping.
- Module 4:** focuses on the different types of conflicts related to the use and management of land and water resources. The module also discusses the causes and consequences of conflicts and summarizes the different tools in conflict analysis and ways to manage conflicts.
- Module 5:** describes the role of PLUP in sustainable land use management from different perspectives, such as, how PLUP is used as a tool in achieving integrated water resource management and forest and landscape restoration.

## 1.5. The training tools

The learning method adopted involves lectures, brainstorming, experience sharing, working group discussions, as well as learning from relevant examples and case studies. A set of questions and exercises leading to discussions and small group presentations are also included in each module. These questions and/or exercises further provide a basis to think through problems and solutions related to land-use planning. The exercises can also be assigned as homework which can be done between sessions or classroom assignments.

# Module 1: General Introduction to Participatory Land-use Planning

## 1.1. Definition of terms and concepts

This session of the training focuses on defining or describing terms and concepts related to LUP. It is designed to lay a foundation for understanding the subsequent sessions and modules included in the course material.

### 1.1.1. Land and land resources

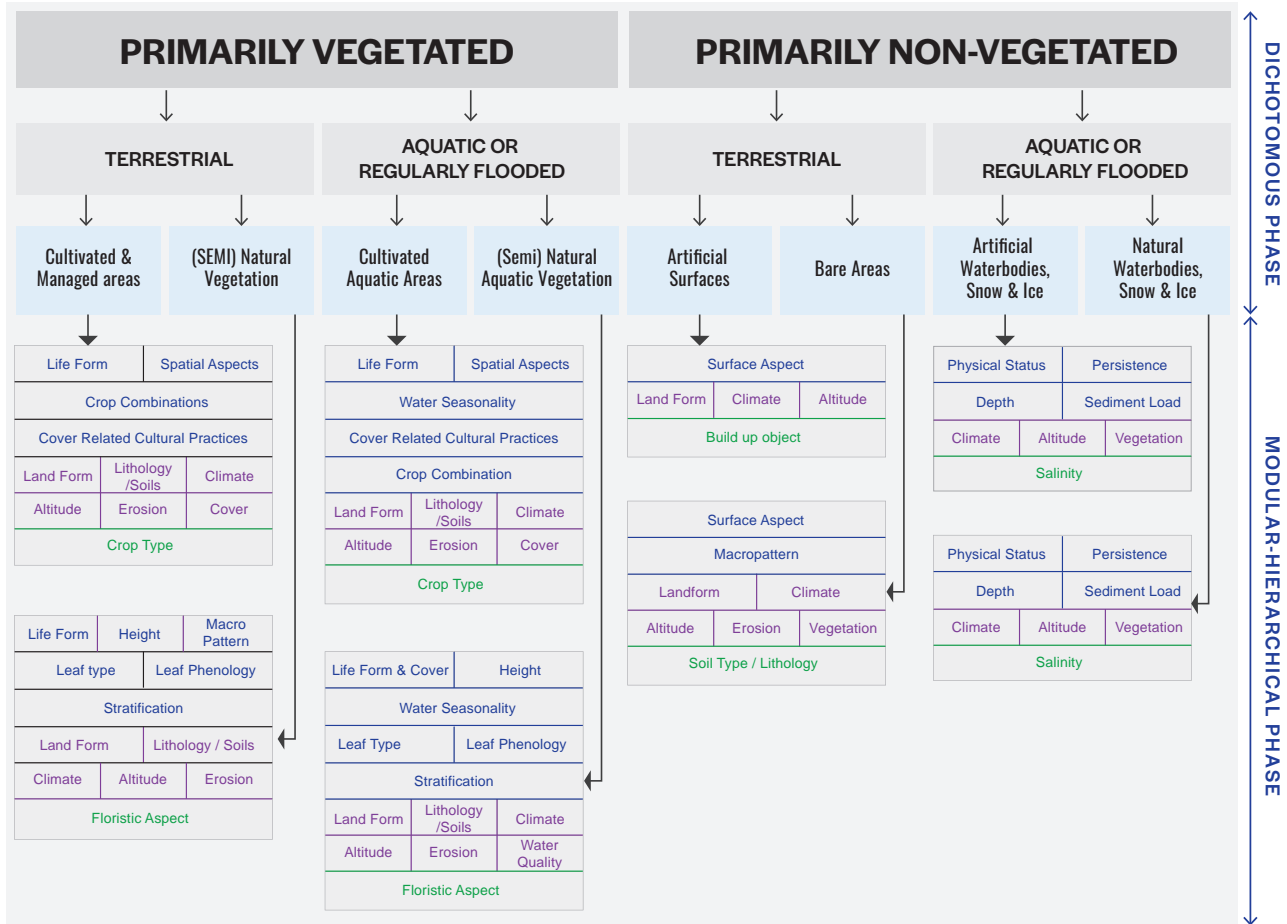
Land is a delineable area of the earth's terrestrial surface, encompassing all attributes of the biosphere immediately above or below this surface including those of the near-surface climate, soil and terrain forms, the surface hydrology (including shallow lakes, rivers, marshes, and swamps), the near-surface sedimentary layers and associated groundwater reserve, the plant and animal populations, the human settlement pattern and physical results of past and present human activity (terracing, water storage or drainage structures, roads, buildings, etc.) (FAO, 1993). Land resources encompasses the physical, biotic, environmental, infrastructural and socio-economic components of a natural land unit. The natural capital of land resources includes the properties of the soil (chemical, physical and biological factors), geomorphological, biotic and hydrological features, that interact with each other and with climate to determine the quantity and nature of ecosystem services provided by the land (Orr et al., 2017).

### 1.1.2. Land-use and land cover

Land use is characterised by the arrangements, activities and inputs people undertake in a certain land cover type to produce, change, or maintain it (FAO/UNEP, 1999). Land cover refers to the physical land type such as forest or open water found on the earth's surface (Di Gregorio and Jansen, 1998). It is what immediately appears on the surface of the earth (Negash, 2012). In 2002, FAO developed a two-phase (see Figure 1.1) Land Cover Classification System (LCCS) to provide a consistent framework for the classification and mapping of land cover (Di Gregorio, 2016).

### 1.1.3. Land use planning

Land use planning is the systematic assessment of land and water use potential to select and adopt the best land-use options for land-use and socio-economic conditions (FAO, 1993). It can be categorized depending on purpose, spatial scale, approaches and the focus of the resources to be covered by the planning process (Metternicht, 2017). The challenges of managing landscapes require a rational utilization of land and water resources to sustain and enhance productivity and maintain functioning and resilient ecosystems. For example, expanding agricultural land to increase production is no longer possible in most parts of Ethiopia. Food security should therefore be achieved by increasing (and then maintaining) production on already-existing agricultural land to meet the demands of growing populations. Land-use planning and, more broadly, land resource planning (LRP), are tools for achieving sustainable and efficient use of resources, considering biophysical and socioeconomic dimensions. The overall purpose of conducting land use planning is summarized in Box 1.1.



**Figure 1. 1.** Overview of land cover classification system, its two phases and the classifiers (Di Gregorio, 2016).

## Box 1.1 Why is LUP being carried out?

*Land-use planning creates the preconditions required to achieve a type of land-use that is environmentally sustainable, socially just and desirable and economically sound. It thereby activates social processes of decision making and consensus building concerning the utilization and protection of private, communal or public areas. The need for planning arises whenever there is a competition for land and land resources in any form or in regions or sub-regions where severe degradation of natural resources (for example soil erosion or deforestation) takes place, conflicts over the use of natural resources increase and/or the productivity remains limited although possibilities for intensification, diversification and development exist. Its purpose is to select and put into practice those land-uses that will best meet the needs of the people while safeguarding resources for the future (FAO, 1993).*

### 1.1.4. Land evaluation (LE): Approaches to land classification

Land can deteriorate by mismanagement, inappropriate land-use or by certain cultivation practices. To avoid misuse of land, considering or investigating its capability and suitability for a particular utilization type is crucial. A fundamental part of LUP is a systematic land evaluation/assessment process, used widely for determining the suitability of land for various uses, thus increasing the efficiency and effectiveness of decision-making processes on land-use, management and governance

(FAO, 2017). Land evaluation (LE) is the process of collecting and interpreting basic data on soil, vegetation, climate, topography, hydrology, socioeconomy and other aspects of land in order to identify and make a comparison between land-use alternatives (FAO, 1976). It is a tool in the planning process and should be used in a flexible way in order to meet changing conditions (environmental, social, economic and political).

### 1.1.5. Land capability and suitability

Land capability is an inherent capacity of land to perform at a given level for a general land-use whereas land suitability

bility is a state of adaptability of a given area for a specified land-use. In other words, land suitability is the fitness of a given type of land for a defined utilization type. The process of land suitability classification is the appraisal and grouping of a given parcel of land for specific uses based on its fitness (FAO, 1993). Classifications of land mean assigning each tract, or piece of land within a specific area its proper class based on its attributes: quality or characteristics of land.

### 1.1.6. Sustainable land management

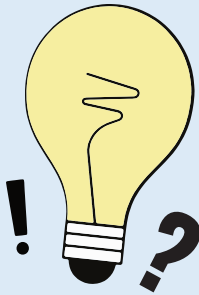
Sustainable land management (SLM) is the use of land and water resources, including soils, animals and plants for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and ensuring their environmental functions (Sanz et al., 2017). Regarding SLM, it

is important to define for what purpose the land is to be used. It seeks to harmonize the often-conflicting objectives of intensified economic and social development, while maintaining and enhancing the ecological and global life support functions of land resources. SLM postulates that both these aims can be achieved simultaneously in a true win-win situation if things are done appropriately (Greenland, 1994).

### 1.1.7. Participatory land use planning tools

These refers to tools and methods used for conducting land use planning at appropriate scales and assist to investigate the diverse and often competing uses of land and land resources. Also, they refer to tools used to select land use and management options that ensure sustainable agricultural productivity and food systems (FAO, 1993).

## Exercise 1.1



**Title:** Case study: “Land use and land cover (LULC) changes in the Central Rift Valley (CRV): Assessment of perception and adaptation of stakeholders”.

#### key discussion questions

- Are the LULC of the central rift valley changing?
- What are the key changes that you have observed?
- What are the major drivers of the changes?
- What are the most widely perceived impacts of these LULC changes?
- How do communities cope with the changes?
- How do you see the adaptive capacity of communities?

**Approach:** Brainstorming – the participants will be grouped into smaller groups

**Type:** group exercise.

**Materials:** Stationery.

## 1.2. Participatory land use planning

Participatory land use planning (PLUP) is meant to ensure that local land-users play a central role in decision-making processes regarding the planning, use and management of land and land resources they depend upon. It brings the different stakeholders (Box 1.2) together and helps develop a common vision and resolve conflicts over the use of land and land resources. In particular, it provides an opportunity for

marginalized groups such as women and youth to take part. Participatory land use planning provides information and direction to the stakeholders to: a) optimize the productivity of the land and land resources, b) develop infrastructure and services, c) protect the environment and biodiversity, and d) establish appropriate governance and administration systems. It integrates indigenous or local knowledge with western scientific knowledge. This establishes a strong knowledge base, contributes to better management and governance of natural resources and helps to improve livelihoods of local communities, in support of national development initiatives (FAO, 2017). The differences between conventional land-use planning and PLUP are summarized in Table 1.1.

**Table 1.1. Characteristics of the different land use planning types (Negash, 2012)**

Aspects	Conventional land-use planning	Participatory land-use planning
Planning level	National, Regional, District, Basin, watershed, sub-watershed	Local level (village, community, micro-watershed, Kebele)
Main actors	Regional and district line experts, regional and district administrators	Community, local communities, local officials, local experts, and other local stakeholders
Main focus	Identification of optimal land use areas through land suitability classifications and enforcement of the same by means of incentive or legal directives	Preparation of sustainable land use units based on the priorities and interest of local people, participatory implementation and managing of land resources for optimal and equitable land use
Main criteria	Technical parameters such as temperature regime, soil depth, soil fertility, slope, socio economic factors etc	Local peoples' needs and priorities, government policies and guideline coupled with rapid appraisal of land resources
Land tenure	Not relevant	Considered as crucial issue, need for clear ownership, or use right, changes for land tenure right are specified
Implementation	Implemented within a fixed time periods	Implemented as a process with a sequence of steps according to a village/land users' pace and time and resource availability
Main objective	To make best use of land resources as per the objective criteria	Strengthening local level stakeholders' capacities in managing their resources in a sustainable way

### Box 1.2 Who are the stakeholders?

*A study conducted in the lake Hawassa catchment (Mekuria et al., 2020), for example, identified about 25 stakeholders involved in landscape restoration, including government organizations and NGOs, local administrative bodies, civil society, the private sector and local communities or farmers. Of the 25 identified stakeholders, eight are identified as key stakeholders, one as primary stakeholders, and 16 as secondary stakeholders (Mekuria et al., 2020).*

### 1.2.1. Tools for participatory land use planning

Addressing the challenges of using and managing land and land resources through PLUP requires an updated set of tools and approaches. Such a set of tools should consider biophysical, economic, socio-cultural and governance dimensions, and it should promote integrated landscape and water resources management as a means to satisfy the needs of multiple stakeholders and implement diverse national strategies and commitments (FAO, 2017 and 2019). The biophysical, socio-economic and integrated biophysical and socio-economic tools used in PLUP are briefly described below. Table 1.2 summarizes the sub-categories of each PLUP tool.

#### i) Biophysical tools

Biophysical tools give prominence to biophysical attributes (climate, soil, terrain, water, etc.) and their interactions in the land use planning processes. The output, in most cases, guides the users to suitable options for land-use alternatives, based mainly on biophysical attributes. Land suitability analysis is a typical example of tools that can be categorized under this group (Table 1.2). Sophisticated or simplified models used for predicting crop growth and yield also fall into this category (e.g. a crop simulation model such as AquaCrop).

## ii) Socio-economic and negotiation tools

Socio-economic and negotiation tools cover aspects of the human environment (farming systems, tenure, aspects of participatory planning, etc). The tools in this category (Table 1.2) give prominence to the characterization of social and economic settings required for PLUP and include approaches and methods for participatory decision-making. Biophysical conditions may be considered in these tools, but are not the main focus.

## iii) Integrated biophysical, socio-economic and negotiation tools

Integrated biophysical, socio-economic and negotiation tools (Table 1.2) make joint use of data and methods applied in both the biophysical and socio-economic spheres following a participatory and negotiated approach. The tools in this category use inputs from both biophysical characteristics and socio-economic conditions. Generally, they incorporate principles, approaches and methods of PLUP, with the overall objective of reaching mutually beneficial outcomes for all stakeholders. In the case of RVLB, this tool can be used in conjunction with tools being developed to accelerate implementation of integrated water resources management, in which the dimensions of biophysical, social and economic are embedded.

**Table 1. 2. Sub-categories of PLUP tools (FAO, 2019)**

Biophysical approaches/tools	Socio-economic and negotiation tools	Integrated approaches
Land evaluation	Farming systems analysis	Rural appraisal
Agroecological zoning and derived tools	Gender analysis	Spatial planning (Urban/Rural)
Soil Productivity Indices	Governance/tenure analysis	Territorial development/ sustainable land management
Software/Applications in Land Resources Planning	Household surveys	
	Participatory/negotiated approaches	

## 1.2.2. Key factors necessary for developing participatory land use planning

PLUP requires the consideration of some key factors or issues (Negash, 2012). This sub-section of the session describes the three key factors (integration, interaction and participation) necessary for developing a PLUP process.

### i) Integration

Integration refers to:

- Combining elements of both bottom-up and top-down approaches.
- Considering the complex biophysical and socio-economic variables which determine the land use system.
- Considering legal and institutional aspects which facilitate the implementation of the plan.
- Working across sectors as part of development processes.

### ii) Interaction

Interaction refers to:

- Ensuring a negotiation process, in which land users interact among themselves and with specialists.
- Allowing different levels (national, sub-national and local level) to interact in the planning process.

### iii) Participation

Participation refers to ensuring the process of being involved in the practice of land use planning. Participation can be categorized as:

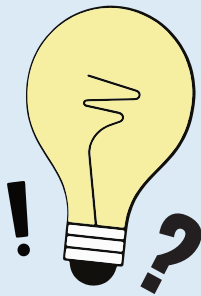
- **Passive participation:** people are told what is going to happen or what has already happened. In such kinds of participation, stakeholders participate by answering the questions of external agents.
- **Participation by consultation:** people participate by being consulted, and external agents listen to views.
- **Participation for material incentives:** people participate by providing resources in return for material incentives.
- **Functional participation:** people participate by forming groups to meet predetermined objectives related to a project but are still dependent on external initiators.
- **Interactive participation:** people participate in joint analysis, which leads to action plans and formation of new local institutions or strengthening existing ones.
- **Self-mobilization:** people participate by taking initiatives to change systems independent of external influences.

PLUP is always aimed at achieving the highest level of participation in order to ensure that people have a greater voice in planning and decision-making, become empowered, develop ownership for planning and implementing activities and to sustainably manage their land and the natural resources they rely on (Schweddes and Werner, 2010). The key principles of PLUP are summarized in box 1.3.

## Box 1.3 Principles of PLUP (GTZ, 1999)

- In terms of both method and content, PLUP is orientated to local conditions.
- PLUP considers cultural viewpoints and builds up on local environmental knowledge.
- PLUP considers traditional strategies for solving problems and conflicts.
- PLUP assumes a “bottom-up” process based on self-help and self-responsibility.
- PLUP is a dialogue, leading to successful negotiation and co-operation among stakeholders.
- PLUP is a process leading to an improvement in the capacity of the participants.
- PLUP requires transparency.
- The differentiation of stakeholders and the gender approach are core principles in PLUP.
- PLUP is based on interdisciplinary cooperation.
- PLUP is an iterative process.
- PLUP is implementation-orientated.

## Exercise 1.2



**Title:** “Land capability and suitability classification”.

### key discussion questions

- What tools are available?
- What are their capabilities and limitations?
- Which tools best suit which stakeholders and land resource planning professionals? and for which regions and scales of planning are they suitable?

**Type:** group exercise.

**Materials:** Stationery.

## 1.3. Levels of land use planning

This session presents the different levels of land use planning as described by Negash (2012) and FAO (2014). The different levels of land use planning are summarized in Table 1.3.

### i) National level

This level of land use planning is concerned with national goals and the allocation of resources which are complex. A national land-use plan may cover.

- a) Land-use policy: balancing the competing demands for land among different sectors of the economy including food production, export crops, tourism, wildlife conservation, housing and public amenities, roads, and industry.
- b) National development plans and budget: project identification and the allocation

of resources for development.

- c) Coordination of sectoral agencies involved in land use. E.g. promoting coordination between the basin office and agricultural bureaus
- d) Legislation on such subjects as land tenure, forest clearance and water rights.

### ii) Regional or basin level

At this level of PLUP, a coordination office is established mainly for follow-up and partially financing the execution of day-to-day technical activities and their implementation. The coordination activities are carried out in cooperation with executing sector bureaus, such as Bureau of Agriculture and Natural Resource, Basin Development Office, Bureau of Finance and Economic Development and other implementing bodies at Zone, and Wereda levels. Hence, the principal functions and responsibilities, at this stage, are:

- Managing resources in accordance with the PLUP objectives, procedures and goals.
- Carrying out overall local level PLUP oversight on planning, implementation, quality and technical super-

vision and improving monitoring quality of local level PLUP activities.

- Providing the necessary support to the subordinates involved in implementation.
- Administrating the local PLUP by providing technical assistance, training, office equipment, furniture, vehicles and operating costs in support of implementation and management.
- Following-up and backstopping the implementation processes.
- Providing support in employing and administrating staff at Kebele level.
- Preparing and submitting progress and financial reports, annual budgets and work plans and programmes of the local level PLUP team to higher bodies.

### iii) District/Wereda sub-basin level

It refers not necessarily to administrative districts but also to land areas that fall between national and local levels. The kinds of issues tackled at this stage include:

- a) Developments such as new settlements, forest

plantations and irrigation schemes.

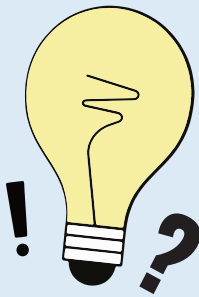
- b) Improvement of infrastructure such as water supply, roads and marketing facilities.
- c) Development of management guidelines for improved land use on each type of land.

### iv) Local or community level

Some of the characteristics of PLUP at local level include:

- a) The planning unit may be the village, a group of villages or a small water catchment.
- b) This is the first level of planning, with its priorities drawn up by the local people.
- c) It is about getting things done on particular areas of land – what, where and when, and who will be responsible.
- d) “Bottom-up” approach. The experience and local knowledge of the land users and local technical staff are mobilized to identify development priorities.

## Exercise 1.3



**Title:** “Levels of LUP in Ethiopia”.

#### key discussion questions

- Are there different levels of LUP in Ethiopia?
- What are the specific functions of the different planning levels, how do they interact and influence each other?
- Are there any links established between LUP and river basin planning?
- Which levels have priority and direct other levels, which have to follow the directions?
- What are the possible advantages and disadvantages?

**Approach:** Demonstration and working group discussion-working group will participate and reflect their opinion.

**Type:** group exercise.

**Materials:** Stationery.



**Table 1. 3. Levels of land-use planning in the context of Ethiopia (FAO, 2014)**

Level	Approx. scale	Objectives	Responsible Institutions
National	1:1,000,000	<ul style="list-style-type: none"> <li>■ Land use policy</li> <li>■ Land administration</li> <li>■ Legal framework</li> <li>■ National programs</li> <li>■ Establishment of National conservation areas</li> <li>■ Facilitating LUP at Regional level</li> <li>■ Capacity building</li> </ul>	<ul style="list-style-type: none"> <li>■ Ministries and Institutions</li> <li>■ National Task Force</li> <li>■ Inter-ministerial Coordination Committee</li> </ul>
	1:500,000	<ul style="list-style-type: none"> <li>■ Land use policy</li> <li>■ Land administration</li> <li>■ Legal framework</li> <li>■ Regional programs</li> <li>■ Facilitating LUP at lower levels</li> </ul>	<ul style="list-style-type: none"> <li>■ Bureaus and Departments</li> <li>■ Regional Task Force</li> <li>■ Inter-bureau Coordination Committee</li> <li>■ Basin Development office</li> </ul>
Meso-level (Zone, Wereda, Sub-Basin)	1:250,000 1:100,000 1:50,000	<ul style="list-style-type: none"> <li>■ Regulating land use and checking of procedures</li> <li>■ Land administration</li> <li>■ Establishing technical services</li> <li>■ Promoting dialogue</li> <li>■ Translating strategies into action</li> <li>■ Facilitating LUP at community level</li> <li>■ Establishing protected areas and land zoning and development of e.g. buffer Zones along rivers and water bodies</li> </ul>	<ul style="list-style-type: none"> <li>■ Govt. technical services</li> <li>■ Wereda Land Administration &amp; Use</li> <li>■ Wereda Watershed / Range land Development Team</li> </ul>
Kebele & Community	1:10,000	<ul style="list-style-type: none"> <li>■ Participatory Rural Appraisal</li> <li>■ Village land use plan</li> <li>■ Dialogue, negotiation</li> <li>■ Implementation of land use plans</li> </ul>	<ul style="list-style-type: none"> <li>■ Kebele Development Committee</li> <li>■ Land Resource Management Group</li> <li>■ Cooperatives</li> <li>■ NGOs</li> <li>■ Bottom-up” planning</li> </ul>

## 1.4. Common stages and steps in land use planning

Fundamentally, there are two main phases of PLUP: formulation and implementation stages (Schwedes and Werner, 2010; Metternicht, 2017). The first phase or stage of PLUP (i.e. formulation stage) comprises a range of steps and activities (Figure 1.2). These are:

### Step 1: Organisational activities

In this step of the first stage of PLUP, the need for land-use planning is assessed and logistical, financial and institutional preparations are made in order to address the need for LUP. At the same time, the planning level is determined (see section 1.4).

### Step 2: Analysis

This second step of the first stage includes a detailed stakeholder (see Box 2 in section 1.2) and issue analysis and the setting up of platforms for dialogue. All relevant existing data is identified, and analysed, and new data is collected through the use of participatory as well as technical tools. The nature of data required is determined by the objectives and the focus of the LUP process.

### Step 3: Planning and decision-making activities

In this step of the first stage of PLUP, the most important issues regarding the existing land-uses are discussed with all concerned parties in order to identify means to improve the use of land resources and to settle conflicts. A typical element of a PLUP process is the development of a zoning concept which is agreed upon with all stakeholders, but also structural deficits are discussed. The process must be closely facilitated by moderators to steer discussions and to help solve conflicting issues. Consent for future developments need to be found among the stakeholders. The formal approval of the plan, regulations and recommendations by decision-makers is an important part of this step. In the second stage of the process (i.e. the implementation and monitoring stage), the plans are implemented according to the timing and the responsibilities suggested in the plan and according to the availability of resources. It must be emphasised that PLUP is an ongoing, iterative process (“rolling planning”) and will therefore be institutionalised for monitoring and continuous adaption.

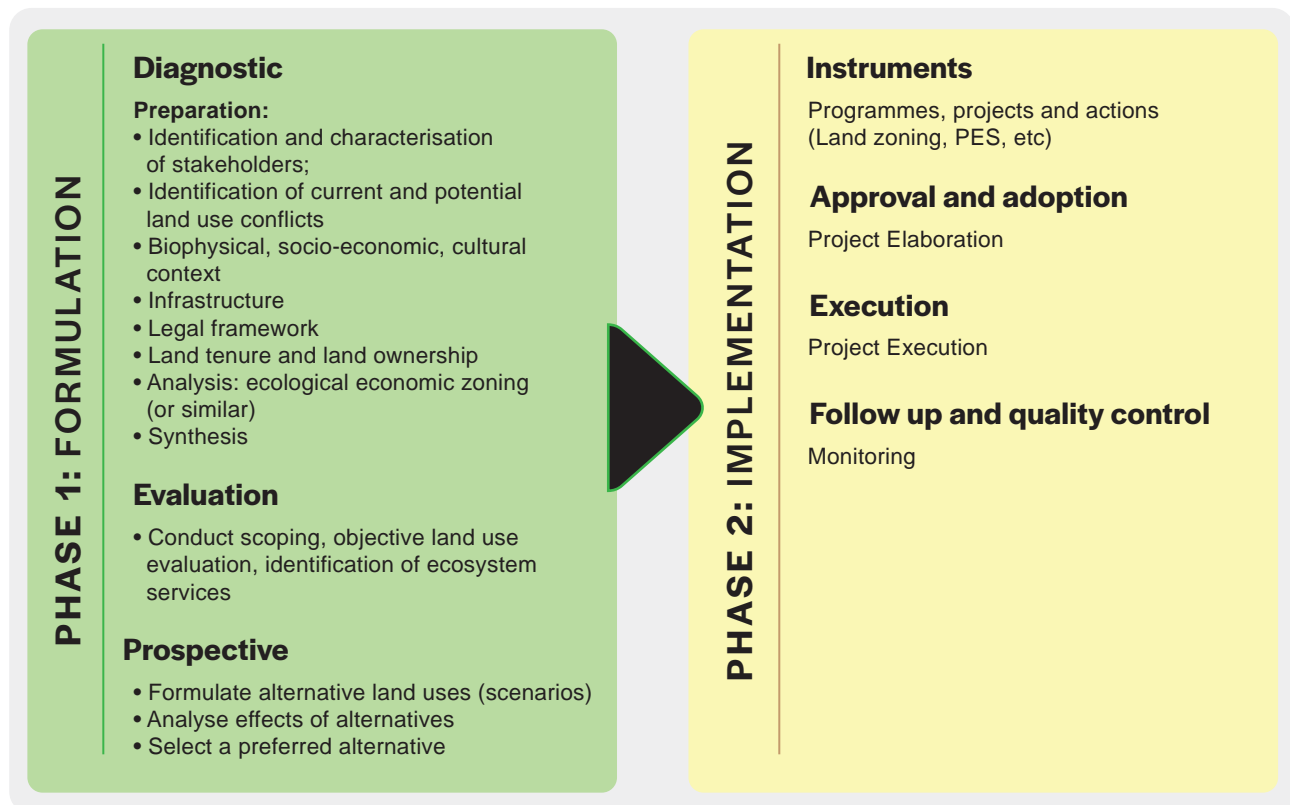
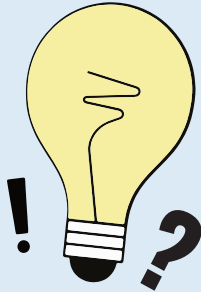


Figure 1. 2. Steps of the land use planning process (Metternicht, 2017).

## Exercise 1.4



**Title:** “Participation in Local level PLUP (LLPLUP)”.

**Exercise:** For each of the following steps, the assigned working groups will discuss what should be (main tasks/activities and purposes) included and the mechanisms to address them (appropriate methodology)?

- Pre-field work
- Field work
- Data analysis and identification of best options/solutions
- Land units mapping and Preparation of LLPLU plan
- Presentation of the Plan/Report and handling to the land-users
- Participatory Monitoring and Evaluation

**Approach:** Group exercise and presentation.

**Type:** group exercise.

**Materials:** Stationery. Markers (various colours), Note Pads, Pencils/pen, Reference Data/Problem Tree, Glue Sticks, Flip chart.

## 1.5. Participatory impact monitoring in land use planning

For a successful PLUP process, the development of a suitable participatory monitoring system with focus on impacts is of utmost importance. As an outcome, successes or weaknesses in the LUP system may be tracked allowing an appropriate response to be justified to decision makers. The system should be adapted to the local conditions and be easy to implement. It should concentrate on the most important changes and effects directly caused by the activities which are undertaken as a result of the LUP process (Schweddes and Werner, 2010).

### What is participatory impact monitoring?

Monitoring means continuous observation, reflection and correction of activities. It is actually done in an informal way by farmers or institutions all the time, for instance, when farmers do regular checks on the quality of their crops or on the well-being of their cattle herds and adapt their farming practices according to their observations. In the context of PLUP, the term “participatory impact monitoring” refers to a participatory process of observation, reflection and decision-taking regarding the planned activities and/or projects. It will help to direct the PLUP process into the right track and to correct activities whenever the results or effects do not optimally meet the expectations and needs of the people (Germann and Gohl, 1996).

The focus of any monitoring system should not only be on the fulfilment of action plans, but should also reflect:

- whether the planned activities still correspond to what

- people envisioned,
- the effects of the activities or projects (positive / negative, expected / unexpected),
- the experiences and “lessons learned” from the implementation of the plans (and application to inform future activities),
- new developments which take place and have to be considered in the land-use plan (“rolling planning”).

The process of participatory impact monitoring will further strengthen the organisational structures as well as the management and conflict-resolution capacities of the local institutions and people. They will become more and more empowered in successfully managing their own natural resources and activities. Some prerequisites for the successful implementation of a monitoring system are:

- Regular meetings with all involved stakeholders,
- Procedures for joint decision-taking in place,
- Continuous interest in the land-use planning / development process,
- Trust amongst and between stakeholders.

Ideally, the monitoring system should be developed during the planning phase. And it is often done based on agreed outcome indicators reflecting levels of impact achieved

### What is an indicator and how is it developed?

An indicator is the representation of a trend tracking the measurable change in a system over time. Indicators are an effective tool to measure progress and performance. Generally, an indicator focuses on a small, measurable, manageable set of information that gives a sense of the bigger picture. One way to develop good indicators is to use the SMART criteria, as summarized in Table 1.4.

**Table 1. 4. Summary of SMART criteria to develop relevant indicators (Kusek and Rist, 2004)**

Criteria	Indicator	Example: M & E Watershed development project
<b>Specific</b>	The indicator should accurately describe what is intended to be measured, and should not include multiple measurements in one indicator.	Bio-physical indicators: * SWC on arable & non-arable land
<b>Measurable</b>	Regardless of who uses the indicator, consistent results should be obtained and tracked under the same conditions	Quantitative measurement: * Soil loss estimation using RUSLE $R * K * LS * C * P$
<b>Achievable</b>	Collecting data for the indicator should be simple, straightforward, and cost-effective	Climate (R) soil (K), slope (LS), Cover management (C) and Conservation practice (P)
<b>Relevant</b>	The indicator should be closely connected with each respective input, output or outcome.	
<b>Time-bound</b>	The indicator should include a specific time frame	Before and after the implementation of the project

**There are four ways to create indicators:**

- Measuring or counting: fixing values, for example quantities of a product or income rates
- Scaling or rating: for example the quality of a product: very good – good – average – bad
- Classifying: informs about non-gradual categories (yes/no; women/men), etc.
- Describing qualitatively:

**Examples:**

- A community decided during the PLUP process to develop gardening and eco-tourism potentials on their land. They identified some simple indicators to monitor the quality of the garden like the quantity of garden products sold (see Figure 1.3) and the benefits for different community groups. Regarding the eco-tourism project, they monitor the employment rates, the number of tourists and other impacts of the tourism flows in their community.
- On a regional scale, stakeholders have planned for improved use of irrigation potentials and to fight against bush encroachment and they have drawn up an action plan. Suitable indicators to monitor the achievements and side effects are developed to guide the implementation process. These could include that land under irrigation increases by 50 ha per year and 50 ha are de-bushed every year.



**Figure 1. 3. Monitoring using the product**  
(Schwedes and Werner, 2010).

# Module 2: Legal and policy framework for development and land use planning in the Central Rift Valley Lakes basin

This session presents core land and water governance functions in the central rift valley lakes (CRVL) basin including policy formulation processes and strategies, regulation and the nature of land right/ownership, stakeholder engagement and interactions, and the role of participation in national and basin-level development planning.

## 2.1. Land ownership structures

Land is one form of property that is subjected to ownership or other forms of use rights. Property is everything that has material or moral value for human beings and guaranteed

and enforced by law (Aubry and Rau, 1966). Land is grouped into one of the following ownership regimes: private, communal, state, and open access (GIZ, 2011). The physical characteristics, different functions and uses of land can imply different owners and/or users (GIZ, 2011; Ambaye, 2013).

### 2.1.1. Private Ownership

Private ownership is a property arrangement in which full and exclusive rights to decide about the property are given to an individual or legal body. The owner shall have the right to use, possess, receive income from it but can partly be restricted by the state (GIZ, 2011). In Ethiopia, individuals do not own land but have user rights (Box 2.1).

#### Box 2.1 Principles of PLUP (GTZ, 1999)

The ground (surface earth) is not subject to private ownership. Land belongs to the state and the people of Ethiopia, and is not subject of sale and exchange. This means that it is futile to classify the land paradigms in Ethiopia from a pure ownership perspective. Rather, the land right provided, as termed in the Rural Land Administration and Use Proclamation (RLAUP), is known as “holding right.” It is less of ownership in that the holder lacks the power of sale and exchange (Ambaye, 2013; Hailu, 2016; Zerga, 2016).

### 2.1.2. Communal Ownership

Communal ownership is a property right held by the community or group of users. Here, there is no single individual in a privileged position to control the resources. In a system of communal property, rules governing access to and control of material resources are organized on the basis that each resource is, in principle, available for the use of every member alike. Every member of the community has the right not to be excluded from the resource (Clarke and Kohler, 2005; GIZ, 2011).

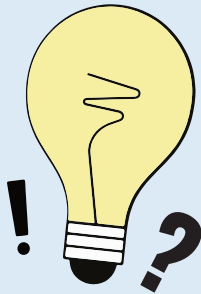
### 2.1.3. State Ownership

State ownership denote the ownership of land by the political body (some authority), a central or municipal level. Though it is the state which owns the land, the objective is to use it in the best interest of society in general (Ambaye, 2013).

### 2.1.4. Open Acces

Property rights are not assigned. Access is unregulated. Today, open access does not exist anymore. But there is a lot of state land that is treated as open access due to the absence of rules or poor law enforcement (GIZ, 2011).

## Exercise 2.1



**Title:** “Land ownership rights – Ethiopian context”.

**Key discussion points:**

- Discuss and compare the merits and demerits of each “land ownership rights”
- What are the common features of communal properties?
- What kind of land falls under which regime in Ethiopia
- Why people tend to care less for what is common as compared to what is their own?
- Differentiate between Land Policy and Land Use Policy

**Approach:** Group exercise and presentation.

**Type:** group exercise.

**Materials:** Stationery.

## 2.2. Development planning

### 2.2.1. Ethiopia’s experience in land use planning and existing legal frameworks

Over the years, several attempts have been made in Ethiopia to develop land use plans at various levels to address land degradation and improve ecosystem services. Under the previous Ministry of Agriculture (MoA), LUP and a regulatory department was established in the late 1970s. The mission of the department was mainly to monitor and follow-up LUP project activities launched at national level. Phase-by-phase, the project was implemented with the objective of covering the country at various scales. The department extended its spatial capacity under the agriculture and natural resources sector. It operates at local and project levels with the provision of technical and material support from the head office. Since the early 1990s, the Ministry of Water Resource (MoWR) began LUP activities at river basins and watershed levels for the purpose of master plans preparation.

The organizational arrangements of the Federal Democratic Republic of Ethiopia (FDRE) decentralized power, authority and responsibility from the centre down to national, regional

states, Zones, Weredas and Kebeles level. In line with this, the government structure, for its rural development operational activities has been divided into central Ministries, Regional Bureaus, and Zonal Departments, Wereda and Kebele Administration offices. Under Ethiopia’s constitutional provisions, there are federal and regional land proclamations providing legal frameworks on the administration and use of land. At federal level, a Rural Land Administration and Use Proclamation (RLAUP) was first enacted in 1997 (Proclamation 89/1997). Proclamation 89/1997 was then replaced by the current legislation, proclamation No. 456/2005. Proclamation 456/2005 delegates regional states with the power to enact rural land administration and land use law. Hence, regional states have formulated their land policies and land laws for expropriation and compensation consistent with proclamation 456/2005. Among them; Oromia Region 130/2007 (first issued 2002, amended in 2007) and Southern People Nation and Nationalities Region 110/2007 (first enacted 2003, amended in 2007). There are lower level laws, regulations and directives, developed in all the regions. Federal and regional land administration and land use proclamations provide unlimited period of use right to farmers, pastoralists and semi-pastoralists. Besides, there are other legislations in Ethiopia related to land matters among which the Urban Land Lease proclamation (Proclamation 711/2011), the Expropriation Proclamation (Proclamation 455/2005) and proclamation 818/2014 for urban land registration are the main ones (Negash, 2012; Ambaye, 2013; Hailu, 2016). Table 2.1 summarizes the many initiatives in Ethiopia (Negash, 2012; Gebeyehu et al., 2017):

**Table 2.1. Land use planning initiatives in Ethiopia.**

Year	Initiative	Host institute/ministry	Remark
1979 - 1990	FAO/UNDP assisted LUP	MoA	The implementation of these initiatives faced lack of rule enforcement and regulatory mechanisms. In addition, the following factors hindered the implementation and effectiveness of the past LUP initiatives: <ul style="list-style-type: none"> <li>■ insufficient awareness and sensitization among decision makers,</li> <li>■ lack of involvement of major stakeholders,</li> <li>■ absence of coordination between different government agencies,</li> <li>■ limited implementation capacity and follow up.</li> </ul>
1989 - 2005	Woody Biomass Inventory and Strategic Planning Project	MoARD	
1996 - 2010	Integrated Resource Development Master Plans	Ministry of Water and Energy	
2010 - 2012	Semi-detailed Integrated LUP projects	Regional States	
2012	Basin level Integrated Land Use and Development Plans: RVLB and middle Awash Sub-basin	River Basin Authority	

## 2.2.2. The importance of a national land use policy to guide PLUP in Ethiopia

Sustainable development can be achieved with sound land administration and management using PLUP as a means (International federation of Surveyors (FIG), 1999). To have an integrated land use plan, there should be a land use policy document directing the planning processes and goals. Figure 2.1 demonstrates the importance of land use policy and land information infrastructure for better land use planning and sustainable development. The policy framework should

provide guiding principles, define the purpose of allocating land for its best social, economic, and sustainable use, and ensure integration of land use planning at all levels. One of the important considerations is the institutional set up required for ensuring that the national land use policy is complied with and for coordinating implementation of the sectoral integrated national land use plan (Gebeyehu et al., 2017).

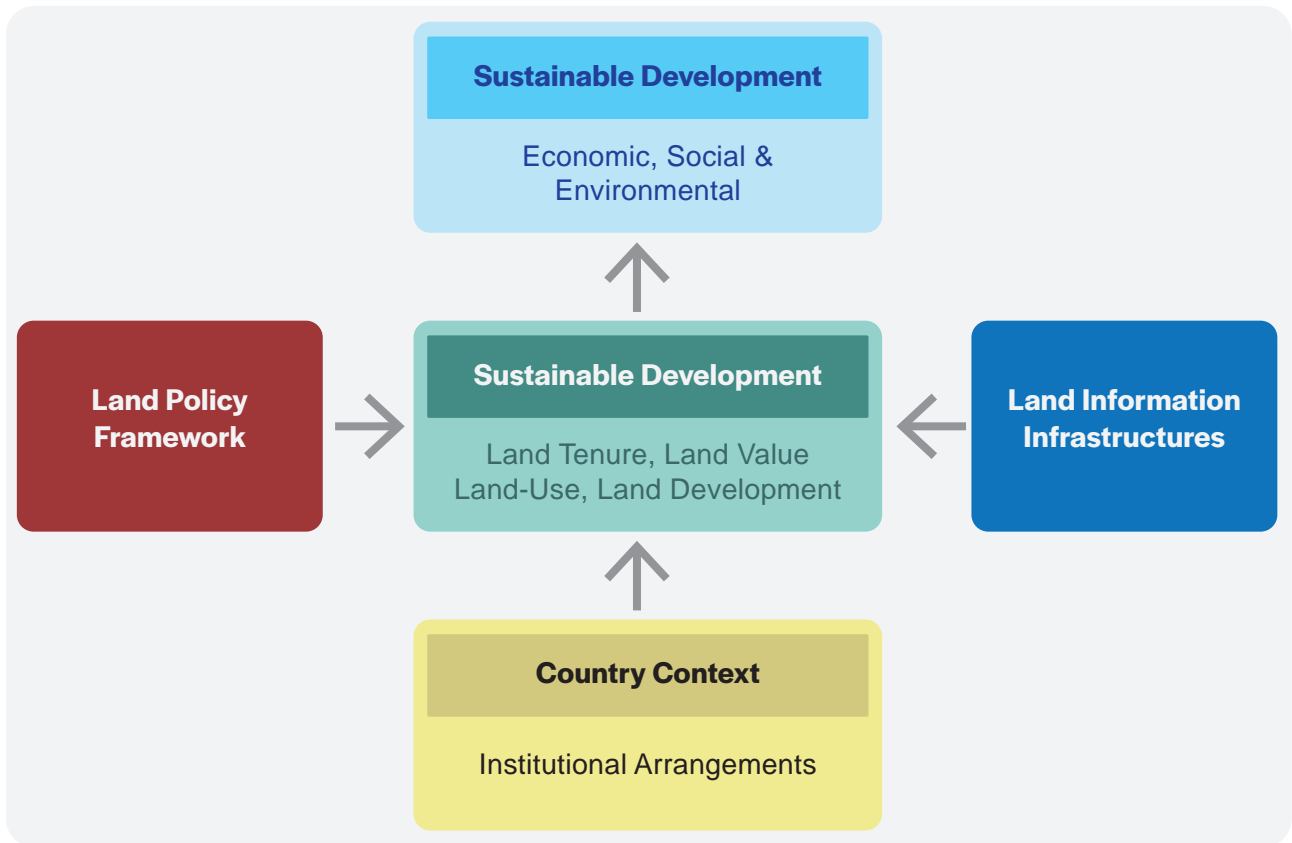


Figure 2.1. Land management paradigm (Enemark, 2005).

## 2.3. Integrated land use planning and institutional arrangements

The Ethiopia’s land use policy and planning involve different ministries and different federal and regional government agencies. For example, Figure 2.2 shows the different offices in Oromia regional state involved in developing LUP and their interactions. The figure illustrates both bottom-up and top-down relationships. Only a few institutions, particularly

at federal, regional and zonal level, are involved in the development and implementation of land use plans while none of the institutions at Wereda and kebele level are involved in this activity (Ariti, 2017). The lack of engagement of all stakeholders in developing land use policies and plans could hamper their effectiveness in achieving the desired goals through affecting implementation and law enforcement (Box. 2.2; Lambin et al., 2003; Belachew and Aytenfisu, 2010; Meshesha et al., 2012; Jebessa, 2016). The division of tasks mostly follows the institutional hierarchy, with strategic tasks, such as the development of land use policies, being centred at the higher levels, and operational tasks being performed by lower institutions.

### Box 2.2 Case study: Farmer’s participation in the development of land use policies for CRV

The ground (surface earth) is not subject to private ownership. Land belongs to the state and the people of Ethiopia, and is not subject of sale and exchange. This means that it is futile to classify the land paradigms in Ethiopia from a pure ownership perspective. Rather, the land right provided, as termed in the Rural Land Administration and Use Proclamation (RLAUP), is known as “holding right.” It is less of ownership in that the holder lacks the power of sale and exchange (Ambaye, 2013; Hailu, 2016; Zerga, 2016).



## FEDERAL STRUCTURES

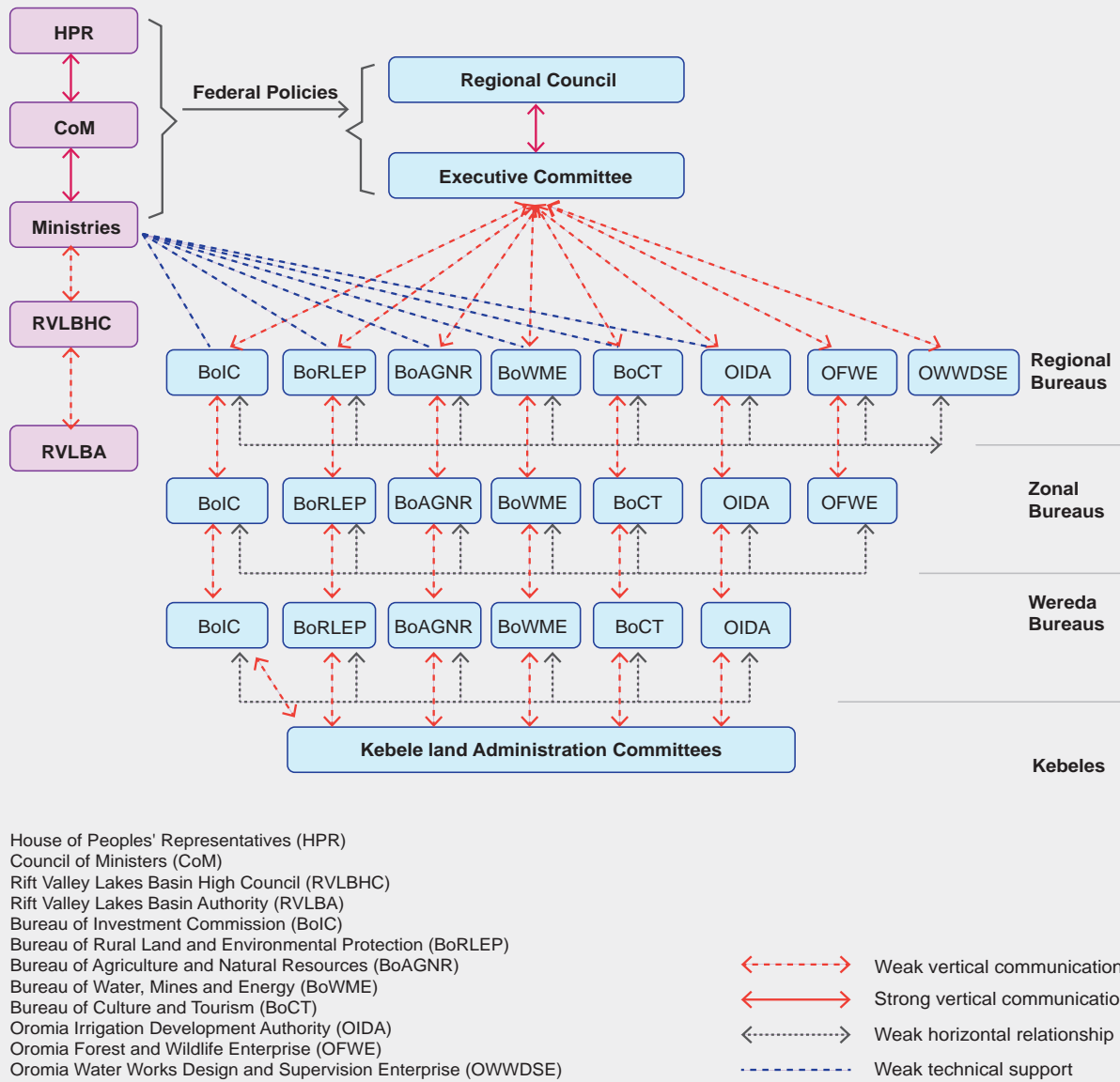


Figure 2. 2. Institutional set-ups and governance structure (Adopted from Ariti, 2017).

## 2.4. Land governance and processes of policy formulation

Land governance comprises the rules, processes, and structures through which decisions are made about access to land, land rights, the manner in which the decisions are implemented and enforced, and the way that competing interests in land are managed (Palmer et al., 2009; Behnassi et al., 2011). It also includes state structures, such as land agencies and ministries responsible for managing land resources, as well as the legal and policy framework for land (Palmer et al., 2009; AUC-ECA-AfDB-Consortium, 2010; Behnassi et al., 2011). Sound land governance fosters the participation of all concerned citizens at all levels in the policy making process and is often seen as fundamental in achieving sustainable development and the protection of natural resources (Behnassi et al., 2011; Gebreammanuel, 2015; Okubo, 2016).

Ethiopia has issued a number of policies that support the sustainable management of land and other natural resources. These include for example proclamation number 456/2005 for

land, 542/2007 for forest, 197/2000 for water, 299/2002 for environment and the Rift Valley Lakes integrated basin development plan. As specified in the state structure and division of power in the Ethiopian constitutions, there are three different units responsible for policy making, policy endorsing and policy implementation. The Council of Ministers together with the respective Ministries and Agencies are responsible for the development of federal land policies. The regional executive committee is also responsible for the development of regional land policies within the framework of the federal land policies. The House of Peoples' Representatives (HPR), at the federal level, and the Regional (State) Councils, at regional level, are responsible for endorsing land use policies at the federal and regional level, respectively. Once the policy is endorsed, then the respective Ministry or Agency will disseminate the policy to the respective implementing institutions such as Ministries, Agencies, regional bureaus, and other relevant stakeholders for their implementation. Citizens also have the right to participate in policy making and are obliged to cooperate in the implementation process (Franzen et al., 2015; Renn, 2015). Figure 2.3 summarizes the major actors that participated in policy formulation and implementation. The level of involvement can range from passive (Franzen et al., 2015) to consultation and negotiation (Pretty, 1995; Maier et al., 2014).

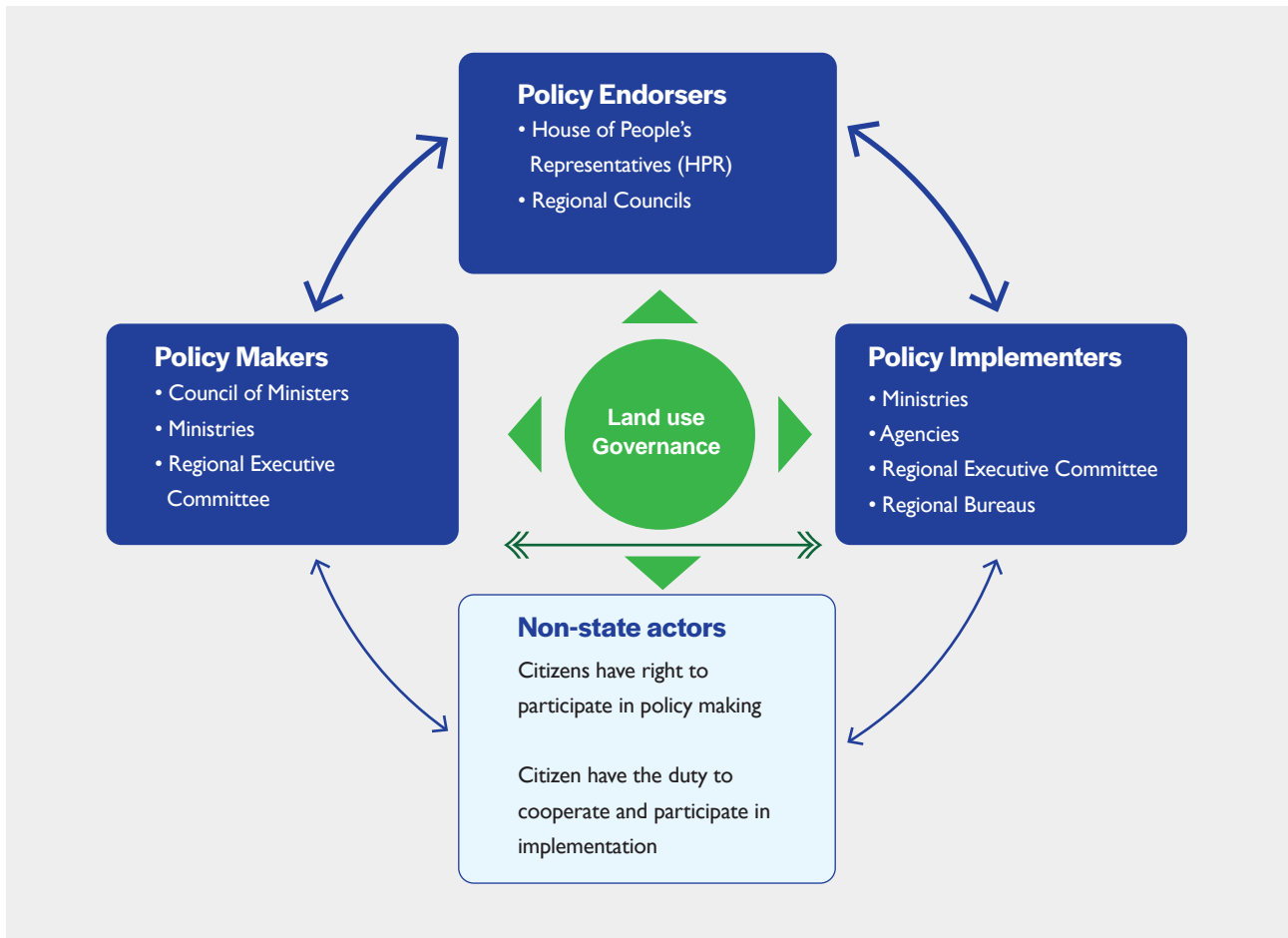
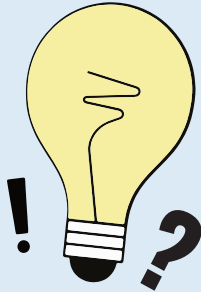


Figure 2.3. Major actors involved in policy formulation and implementation (Ariti, 2017).

## Exercise 2.2



**Title:** “Land use governance – Ethiopian context”.

**Approach:** Intergroup discussion–The participants will be grouped into 4 groups and involve/practice/ in policy making and implementation process.

**The key discussion points include:**

- Who are the relevant stakeholders in Ethiopian land governance in each party;
- Stakeholders’ participation– Why it is important in environmental governance and natural resource management (NRM)

**Type:** group presentation and experience sharing

**Material:** stationery

## 2.5. Links between land and water governance

For integrated land-use planning, it is crucial to understand the links between land and water governance, especially in areas suffering water scarcity and where water is used for irrigation purposes. Good water governance (Box 2.3) plays a key role for economic growth, social inclusion, and environmental sustainability. Hence, it is a prerequisite to address water challenges determining land use and management and to understand basic water governance principles that affect land-use planning (Pahl-Wostl, 2009; Menard et al., 2018).

### Box 2.3 Principles of good water governance

Good water governance promotes legitimacy; transparency; accountability; human rights; rule of law and inclusiveness in water governance processes, emphasise that water governance systems should be designed based on the challenges that they need to address to build a sustainable water sector. It considers that governance is good if it can help address and solve the key water challenges, through a combination of both bottom-up and top-down approaches, respond to place-based needs and foster constructive and effective state-society relations (Organisation for Economic Co-operation and Development (OECD), 2015).

### 2.5.1. Water governance framework

In 2020, Stockholm International Water Institute (SIWI) proposed an easy-to-understand, easy-to-use operational water governance framework in which practitioners can define their interventions. The framework combines governance functions, attributes, and outcomes (Jimenez et al., 2020). On this basis, the sub-session describes the concept based on “what” (the functions), “how” (the attributes), and “what for” (the outcomes). Governance functions – are the key processes performed, in various forms and to varying extents and quality, for the organised development and management of water resources and services. They include the main activities that the responsible organisations (typically a ministry, or basin

authority) should undertake or facilitate, in cooperation with other stakeholders, to develop the sector (Figure 2.4). Governance Attributes – water governance attributes describe how the governance functions are performed, for example – having a participatory process for the governance function on planning (Jimenez et al., 2020). To protect water resources, active and meaningful participation of both planners and other stakeholders’ in the planning process is needed. This includes vulnerable or marginalised groups having the opportunity to influence the decisions (Corcoran et al., 2010). Governance Outcomes – the performance of core governance functions can only be understood when linked to how these functions are conducted (attributes), leading to the desired outcomes of the governance process (Figure 2.4). Outcomes are by nature interlinked and interdependent.

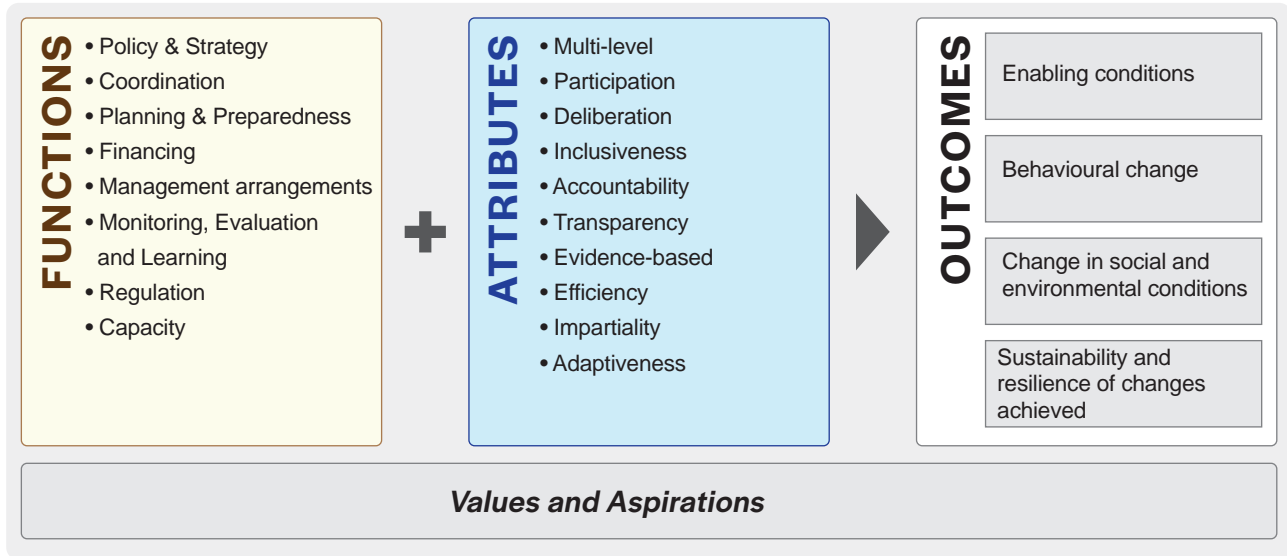


Figure 2. 4. Water governance framework (Jimenez et al., 2020).

## 2.5.2. Water governance in Ethiopia

In Ethiopia, governance and institutional arrangements for water resources development and management are organised at three different levels (Global Water Partnership (GWP), 2015):

### Federal level

The Ministry of Water, Irrigation and Energy (MoWIE), Ministry of Agriculture and, the Environment, Forest, and Climate Change Authority are responsible federal level government institution. The MoWIE formulates policy and legal frameworks; establishes relevant institutions; sets standards; commissions studies; plans and develops water supplies and sanitation, irrigation, hydropower, and other energy forms; and administers water resources protection, monitoring, and allocation. The Ministry also deals with transboundary water issues. The Ministry of Agriculture has responsibility for managing water, but this is mainly water harvested for smallholder farmers who practise rainfed agriculture. The Environment, Forest, and Climate Change Authority is now responsible for preparing environmental protection policy, laws, and directives.

### Basin level

River basin development offices comprising a Basin High Council and river basin authorities are being established to ensure an integrated approach to water resources management at the basin level (For example: RVLBHC and RVLBA). The Basin High Council is the highest decision-making body and is chaired by the Deputy Prime Minister. It comprises ministers of seven federal ministries, presidents of relevant regional states, and the Environment, Forest, and Climate Change Authority. The Council invites selected

regional bureaus, major water users, and specific civil society groups as observers. Regional Water Bureaus (RWB) are responsible for small-scale irrigation and rural water supply (either directly through large borehole drilling programmes, or indirectly through funding local Wereda governments). RWBs have subsidiary structures extending to lower levels in the form of Zonal Water Offices, Wereda Water Desks, and within Kebeles. RWBs also provide technical and financial (for capital investment) support for local water resources management and water, sanitation and hygiene (WASH) projects.

### Local level

Managing and delivering water and sanitation services (including watershed management) is the major responsibility of regional and local institutions, with most functions concentrated at the Wereda level. The Wereda Water Desk (WWD) is generally responsible for planning and managing programmes; managing finance and procurement; and for contracting and supervising local service providers at the district and community levels. In most cases, WWDs also initiate, facilitate, and motivate communities to manage rural water services. At this level and given the current Covid-19 pandemic (see Box 2.4), the role of the WWD becomes very important to make sure that clean water is made accessible to all people for purposes of handwashing and general hygiene. Water is essential for life, health, and human dignity. Provision of safe and adequate water contributes to better health and increased individual productivity (Haylamicheal and Moges, 2012). In most cases, the main health problems are caused by poor hygiene due to insufficient water and the consumption of contaminated water. Having ready access to safe water is therefore important for helping local communities to respond to outbreaks such as the current Covid-19 pandemic.

## Box 2.4 Responsibilities of Woreda Water Desk in the face of Covid-19

The outbreak of coronavirus disease 2019 (COVID-19) started in late 2019 in Wuhan, China. The virus causing the disease is now found throughout the world and continues to spread at an alarming rate. In the absence of a vaccine, non-pharmaceutical interventions have been the mainstay of countries' efforts to prevent new infections. Classic public health interventions are being applied to slow down transmissions and to avoid overstressing health systems. Isolation, quarantine, social distancing, and community containment are being rapidly implemented (Kupferschmidt and Cohen, 2020). These actions have been shown to successfully slow down transmission and, as seen in China and South Korea, has led to containment of the virus (Maier & Brockmann 2020). The following basic measures to reduce transmission of COVID-19 have been recommended by the World Health Organization (WHO) (Figure 2.5) and have been adopted by the Ethiopian Government (Baye, 2020):

- Wash hands frequently using soap.
- Maintain social distancing.
- Stay informed and follow advice given by your healthcare provider.
- Stay at home if you begin to feel sick; and
- If you develop fever or cough or have trouble breathing, seek medical advice and call in advance the centre assigned for COVID-19 response.


In practice it is therefore very important that land use planning practitioners put in efforts to make sure that the land use plans developed are in sync with other development plans such as the strategic basin plan for the CRV within which improving access to safe and clean water for human health is a key objective.

Coherence between and amongst the different resource management and use plans translate into a more coordinated and cross sectoral approach (Box 2.5), the ultimate impact of this being overall improved resources management of Ethiopia.


### Coronavirus (COVID-19)

Preventive measures to reduce the risk of infection from Coronavirus


**SYMPTOMS** → You may have one or more of these symptoms (which are similar to other illnesses such as cold or flu)



**High Fever**




**Cough**




**Shortness of breath**


Frequently wash both hands thoroughly with soap and water for 20 seconds. Before eating, feeding others and touching your face/nose. After going to the toilet, after touching frequently, touched surfaces or being in contact with dirt, dust or fluid.



Cover your nose and mouth when you cough or sneeze. Use a tissue and dispose of it in a closed bin, or sneeze into your elbow. Then wash your hands with soap.

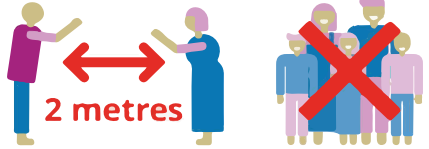


Stay at home if you feel unwell. If you have either a fever, cough or difficulty breathing seek immediate medical attention - call in advance.



Follow your Ministry of Health advice.

Avoid close contact. Maintain at least 2m distance from anyone coughing or sneezing. Avoid group gatherings. Use non-contact greetings.



Regularly clean frequently touched surfaces with disinfectant. Including door handles, mobile phones, light switches, lift buttons, work stations and tables.




Figure 2. 5. COVID-19 preventive measures (<https://washmatters.waterra.org/water-and-hygiene-against-coronavirus>).

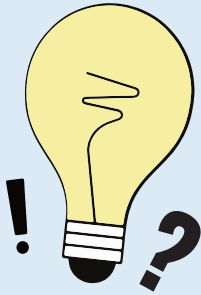
## Box 2.5 Approach to integrate water supply and sanitation with PLUP

The following provides the practical approach how to integrate water supply and sanitation (WSS) with the relevant IWRM principles and PLUP (Moriarty, 2002).

- **Principle one** – Catchment management and source protection are essential to ensuring sustainability of supply
- **Principle two** – Water use efficiency and demand management must be addressed to minimise the need for new source development
- **Principle three** – Multiple uses of water should be acknowledged and encouraged:
- **Principle four** – Participatory in decision-making, but particular emphasis should be put on the active participation of users
- **Principle five** – Gender and equity issues must be addressed throughout the project cycle:
- **Principle six** – Water provision should be priced so as to discourage wasteful use, while ensuring the right to access of a necessary minimum for all

## Exercise 2.3

**Title:** “Ethiopian water resource sectors and importance of its management for land-use planning”.



**The key discussion points include:**

- Why is water resource management important for land-use planning?
- What are water management issues in CRV that need to be considered in PLUP?
- Discuss the drivers of risk for the Ethiopian water sector and potential impacts - biophysical and socioeconomic – that need to be considered in land use planning.

**Approach:** Group discussion.

**Material:** stationery

# Module 3: Guidelines for the stepwise facilitation of participation in land use planning

This module of the course material focuses on the facilitation of participation at local and basin level and discusses the integration of a geographical information system (GIS) in the processes of PLUP. The module also provides information on stakeholders' tasks when preparing a PLUP.

## 3.1. Facilitation of PLUP at the local level

Land use plans should be based on the interests and know-how of land users to make them implementable and sustainable. In this regard, Negash (2012) indicated that local level participatory land-use plans can be appropriate if all stakeholders are identified and included in the planning team. Box 3.1 summarizes the key characteristics of PLUP.

### Box 3.1 PLUP must ensure

- Involving everybody (men, women, different interest groups in land use),
- Gathering different ideas by guiding open and friendly discussions,
- Revealing the underlying interests, needs, views and problems of all land user groups,
- Motivating the discussion and planning process,
- Helping finding consensus amongst all stakeholders,
- Strengthening the self-help and conflict-solving capacities of involved local Stakeholders, and
- Creating a feeling of ownership among stakeholders during the process.-

Local level PLUP can be carried out following four major steps (Analytical stage (step 1); Planning and decision-making stage (steps 2 and 3); and Implementing and monitoring stage (step 4)), depending on technical and budgetary capacities.

### Step 1: Analytical stage

Initiation of a local level PLUP requires discussions and consensus by all stakeholders (Negash, 2012). The discussion can be led by the lead land-use planner (Ethiopian case – federal and regional bureaus). Well organized meetings (ensuring satisfactory participation) should be conducted to identify key issues and focus areas. Also, stakeholder analysis (understanding of Stakeholders' interest, power, vulnerability, and their potential role and relationships) is one of the key activities conducted at this stage. Some of the tools used when conducting stakeholder analysis are summarized in Box 3.2. Relevant documents and additional information regarding land use and development planning are also collected and reviewed.

### Box 3.2 PLUP must ensure

- Stakeholder identification and analysis (Exercise One).
- Checklist for main outputs from the stakeholder meetings.
- Checklists of guiding questions for stakeholder meetings.
- Field visits.
- Participatory review of maps.
- Cross-checking of information through other sources.
- Documentation guidelines for key issue/ focus area identification through meeting.

In most cases it is suggested to include the stakeholders summarized in Box 3.3. However, stakeholder identification and analysis is an iterative process (FAO, 1993) that is completed and refined in consultation with stakeholders. The following outputs are expected from step 1 (Schwedes and Werner, 2010):

- All relevant stakeholders have been identified, analysed, and engaged in the planning process from the very beginning,
- All key issues and possible focus areas of PLUP have been identified and listed through a participatory process

### Box 3.3 Local level PLUP team members (Negash, 2012)

Theoretically, the followings are the established PLUP members at local level:

- Kebele Administration representative
- Development agents (DAs)
- Youth association member
- Women association member
- Health extension workers
- Community elected elders
- Religious leaders
- Frontier farmers
- Representatives of poor and rich farmers identified by election and ranking
- Wereda subject matter experts: Crop, livestock, SWC, rural road and water development
- Wereda and Kebele Land Administration and Use (LAU) experts; and
- Other land users: investors, Non-Governmental organisations (NGOs) and Civil societies

### Exercise 3.1

**Title:** “Stakeholder analysis in PLUP (FAO, 2013 and Schmeer, 2018)”.

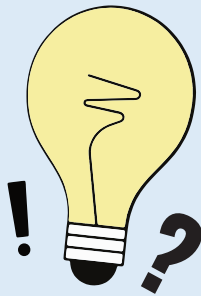
**Purpose:** It is used to avoid the pitfall of bypassing powerful stakeholders

**Activities:**

- Completing a Stakeholder Table – participants will be asked to prepare an initial stakeholder table (Eg: Table 3.1): Only the main stakeholders should be listed at this stage, then present to the other groups to identify common ground and differences of opinion
- Table of Importance and Influence (Eg: Table 3.1) – to agree on stakeholders’ influence and importance scores (five-point scale) for each 1= very little importance or influence, to 5 = very great importance or influence
- Create a matrix of the relations between the actors: using Importance/Influence-Grid (Figure 3.1 for example: top right corner being the most important)
- Prepare Venn charts-to specify how important the impact is considered
- Synthesis of the relationships of the actors
- Power analysis-Relationships of strength and power
- “Suppose you may find out that you have not considered important additional stakeholders or that the group you met was very heterogeneous and is composed of sub-groups with their own points of view”. Hence,
- Explain the demerits behind, if any and
- How will you manage this? (Any past experience)

**Approach:** Working group exercise

**Material:** stationary

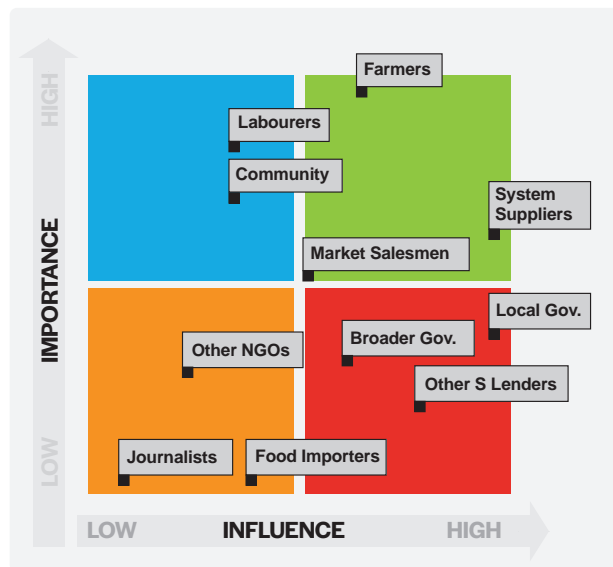




**Table 3.1.** An Importance and Influence Analysis of stakeholders (Ethiopian irrigation program).

Stakeholders	Interest in project	Importance	Influence
<b>Key Stakeholders: significantly influence the success</b>			
Irrigation system suppliers	Increased sales	3	5
Local government officials		2	5
<b>Primary Stakeholders: are directly impacted</b>			
Rural Farmers	Increased earning capacity	5	3
Local labourers	Increased earning capacity	4	2
Local community	Increased supply of local fresh food	4	2
<b>Secondary Stakeholders: have a stake or interest</b>			
Market salesmen	Increased access to produce	3	3
Food importers	Decreased sales	1	2
Money Lenders	Decreased trade	1	4
NGOs	Opportunity for collaboration	2	2
Broader government	Opportunity for taxation	2	3
Local Journalists	Reporters of current affairs	1	2

(Source: Schmeer, 2018)



**Figure 3.1.** Importance/Influence-Grid (Schmeer, 2018).

## Step 2: Planning stage

At this step, the main task is to prioritize the identified key issues and focus areas by using different tools (Box. 3.4; Schwedes and Werner, 2010; Negash, 2012). The overall objectives of this step are to (a) review the results of the stakeholder meetings conducted during the analysis phase (step 1), (b) confirm the relevance of identified issues and - if needed - to add additional ones, and (c) prioritise the key issues.

### Box 3.4 Tools used to prioritise key issues and focus areas

**Preparation of key issue tables:**

Divide the list of key issues identified during the stakeholder meetings and through additional means into main aspects (such as environmental problems, land use conflict...) that the PLUP process addresses and put them on pin boards. Point out whether they are spatial issues or not.

**Produce maps showing potential focus areas:**

The preparation of overview maps on the potential focus areas for PLUP showing basic features like roads, rivers, settlements, national parks, communal areas, and boundaries indicating where the stakeholders identified potential focus areas (see Figure 3.2 as an example).

**Working group formation on key issues:**

Split the participants/stakeholders into groups on a random basis to work on the identified key issues and make sure all issues need to be well understood with their dimensions and possible effects of addressing them.

**Preference ranking:**

The ranking exercise will give all stakeholder groups an opportunity to express their preference with regard to the key issues that should be addressed in the land use plan. Then, document the overall process of steps 1 and all key issues and focus area identified.

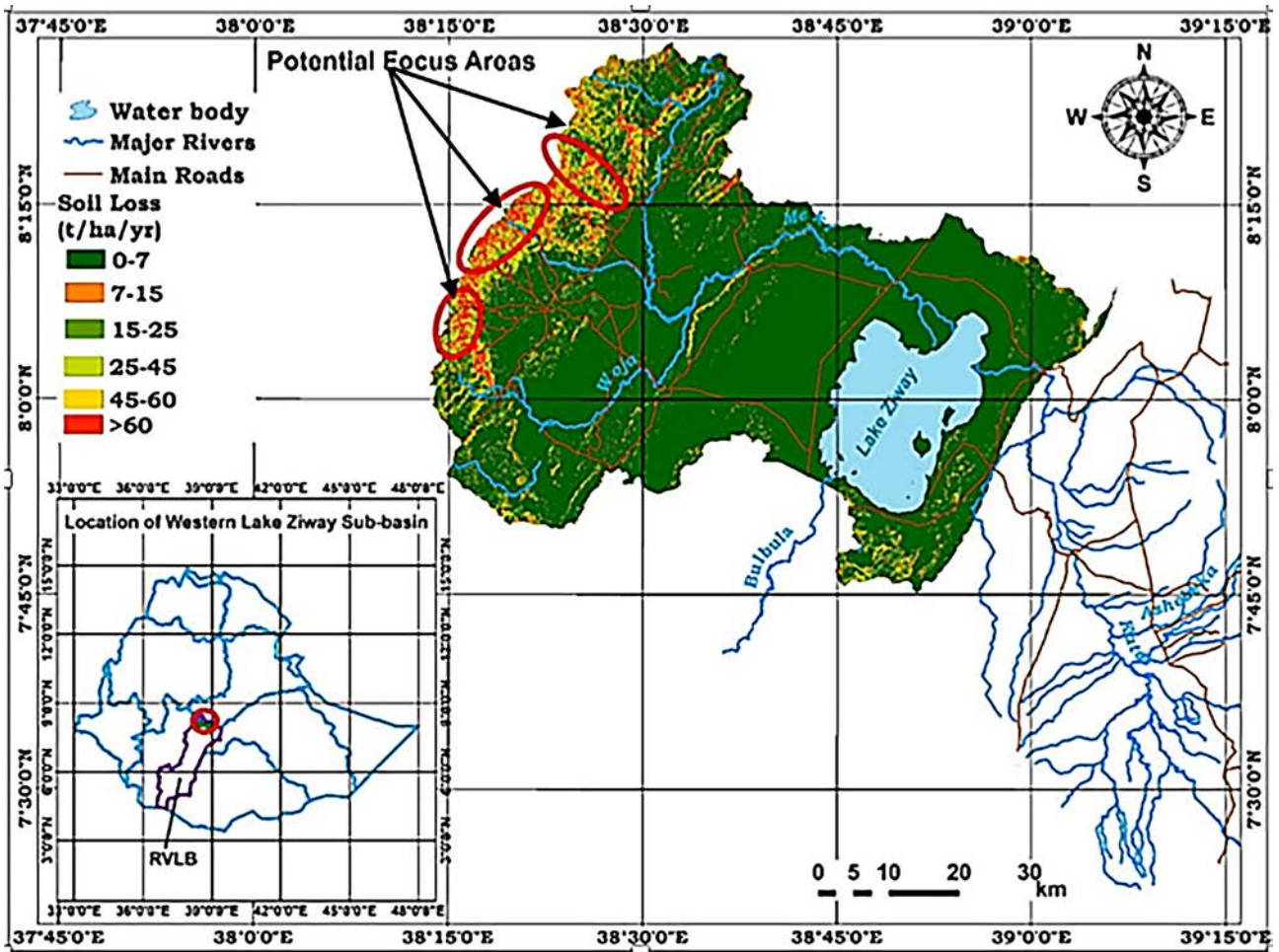


Figure 3. 2. Potential focus areas for PLUP: erosion hotspots areas in the Western Lake Ziway area (Girma, 2019).

### Step 3: Decision-making stage

Prior to the implementation of the planning process, it is important to ensuring that all responsible ministries, institutions and local stakeholders have been contacted (For example Fig 2.2 shows the relevant LUP Institutions in Oromia regional state), have received all relevant planning documentation, collected and studied all the documents, reports, studies and maps. Under this step, the following main tasks should be undertaken using different tools such as workshops and participatory rural appraisals.

- Review of the documentation – further understand the dimension of the key issues, the potentials of the focus area, the underlying causes of a problem, or the structural deficits that land use stakeholders are facing. A joint briefing with the lead PLUP should be realised to ensure that all stakeholders have a sound understanding of the most important technical aspects revealed through the documents.
- Prepare and facilitate workshops – This involves organizing, for example, analysis and planning workshops to understand local peoples’ opinion on key issues. All

stakeholders need to be fully engaged in formulating solutions as well as to develop future land use maps (if applicable) and an action plan.

- Development of action plan – outline all activities planned, how they will be implemented (by whom, when, etc.) and by whom they will be financed. It assists at the same time to empower the community/stakeholders in terms of requesting services needed for interventions and identifying the role they can play in these interventions. It must be pointed out to the community or the stakeholders that they will be able to solve some of the problems themselves, while others require interventions from the government and other development agents. These should commit themselves during the planning process to support the stakeholders in their actions.
- Complementary field survey – whenever questions arise on the accuracy of the spatial data presented (i.e. the development of a future land use map for example), the PLUP team will undertake transect walks and/or GPS survey (ground truthing).

### Step 4: Monitoring and evaluation (M&E) stage

Monitoring and evaluation is an integral element of local level PLUP to know how well the plan is being implemented and whether it is succeeding. At this stage, measuring the results of the local level PLUP, monitoring of activities, achievements, and effectiveness are vital processes. Evaluating outputs and outcomes, and their impact on livelihoods of land users are also necessary. The findings and results will be used by higher bodies, implementers and the LUP team to improve performance and take corrective measures. The key areas that need to be investigated at this stage are summarized in Box. 3.5.

Further, more focus should be given to quantitative (measurable outputs) and objective indicators such as land conditions relevant to the planning goals (Box 3.6). Technically, rank the importance of items to be measured, so that time and budget constraints do not prevent important data from being acquired (FAO, 1995). In Ethiopia's context, regular and frequent process evaluation can be carried out by the Kebele planning team members (includes DAs) that is accountable to the Wereda team members and the steering committee for follow up and actions (Negash, 2012). Figures 3.3. and 3.4 presents steps that can be followed when developing and implementing effective monitoring system, respectively.

#### Box 3.5 In PLUP, it is necessary to answer

- Are the land-use activities being carried out as planned?
- Are the effects as predicted?
- Are the costs as predicted?
- Have the assumptions on which the plan was based proved to be correct?
- Are the goals still valid?
- How far are the goals being achieved?

#### Box 3.6 Impact monitoring indicators (for further details refer "Module 1")

To answer all these questions in Box (3.5), the following indicators (not only) may be considered: Product sales record and crop yield (cost-benefit analysis); Rates of tree growth and livestock production; Water availability – for example in irrigation projects, family and communal ponds; Effectiveness of SWC measures: sediment load and flooding, soil erosion; Land use land cover change analysis; Assess the effectiveness of community participation and stakeholder's linkages, etc.

#### STEP 1

- At the beginning, ask the stakeholders and let them choose the most important expectations and fears
- What changes they expect and fear from the activities they planned

#### STEP 2

- Development of appropriate "indicators" (Box 3.6)
- How they see whether things are changing the way they intend them to change and
- How this change can be determined?

#### STEP 3

- Discuss and decide with the participants
- Who should gather the information needed for monitoring? How this should be done?
- How shall data be collected? Who should have access to the information?
- They should also decide on the frequency of monitoring meetings

Figure 3.3. Procedures for developing a monitoring system (Schwedes and Werner, 2010).

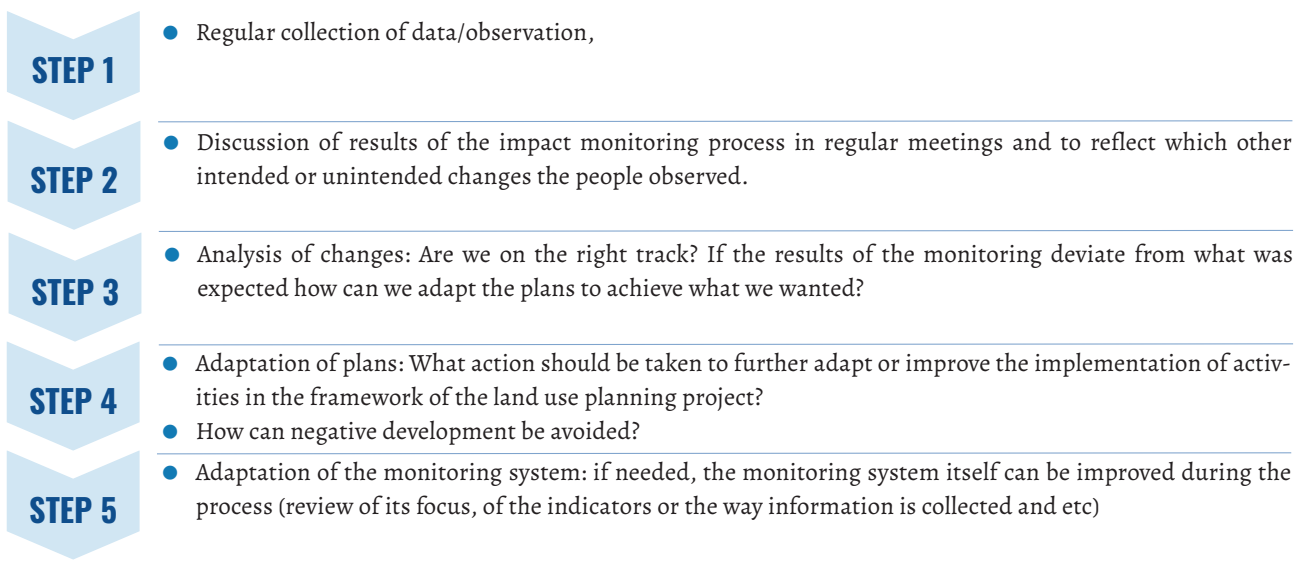
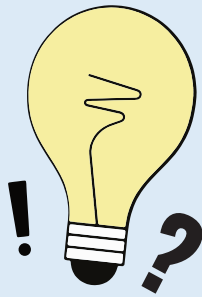


Figure 3. 4. Procedures for implementing participatory impact monitoring system

## Exercise 3.2



**Title:** “Monitoring”.

**Purpose:** To share information on the monitoring systems implemented at local level

**Tasks:** participants will select representative watershed and prepare presentation on their monitoring system. The presentations will be followed by discussion. The presentation should cover:

- Scope of the monitoring programme
- How it is achieved (stakeholders, RBO etc)
- Effectiveness in terms of data quality and completeness

**Approach:** Request the presenters to prepare the day before.

## 3.2. Facilitation of land use planning at the basin level

Sustainable development in basins depends largely on sound management of land use and water allocation policies. Natural resource management, at basin scale, is a valuable option for guiding and co-ordinating processes of management for development in the light of environmental variables (Axel, 2001). The impact of land use; for example, on the hydrological regime and water quality downstream varies with the type of land use itself, watershed size, climate, soil characteristics, topography, and geology. Finding a way (for instance: Source-to-Sea/Lake approach) to incorporate the many diverse factors that influence the functionality and services provided by basins requires integration across scales, sectors and communities (Bach et al., 2011). Considering this, the implementation of PLUP guarantees the application of a holistic and multi-disciplinary approach maximizing a combination of economic, social and environmental benefits. Basin-level LUP makes it possible to accommodate upstream-downstream interactions

in resource use enabling the integration of all-important issues (UNESCO, IWRM Guideline Part I). It is also important to make sure that the land-use plans developed are in harmony with the propositions made in the basin's strategic plan. The PLUP allows natural resource managers to address the linkages between the management of land and other related resources effectively (UNESCO, IWRM Guideline Part I).

### 3.2.1. Key planning elements at basin level

As a process, basin level planning identifies the way in which a river/lake and its limited natural resources may be used to meet competing demands, while maintaining its health. A synthesis basin plan – “Strategic IWRM plan for Ethiopian Rift Valley Lakes Basin 2020-2035” – is a good example in providing a comprehensive document for basin planning (Basin Development Authority and SIWI, 2020). In general, the following key elements are considered to be part of a successful basin management initiative:

- A long-term vision for the basin, agreed to by all the actors/stakeholders.

- Integration of policies, decisions, and costs across sectoral interests such as industry, agriculture, urban development, navigation, fisheries management, and conservation, including through poverty reduction strategies.
- Strategic decision-making at the basin scale, which guides actions at sub-basin or local levels.
- Effective timing, taking advantage of opportunities as they arise while working within a strategic framework.
- Active participation by all relevant stakeholders in well-informed and transparent planning and decision-making process.
- Adequate investment by governments, the private sector, and civil society organisations in capacity for basin planning and participation processes.
- A solid foundation of knowledge of the basin and the natural and socio-economic forces that influence it.

### 3.2.2. LUP procedure at basin level

Prior to conducting an actual LUP process, a basin plan inception workshop guided by a facilitator should be conducted. The pre-planning process encompasses and responds to: (i) what is the purpose of the LUP at the basin scale? (ii) What are the key challenges and opportunities in the basin? (iii) what are the major tasks required to deliver the LUP? And (iv) Who is going to manage the planning process? To this end, the inception phase helps to identify and analyse stakeholders, and formulate key guiding principles (Pegram et al., 2013). Basin level PLUP can be conducted using the following major steps (Halcrow and Generation Integrated Rural Development Consultants (GIRD), 2009; Pegram et al., 2013):

#### Step 1: Baseline situation assessment and resource mapping

At this step, baseline conditions (biophysical and socio-economic) are documented (For example Figure 3.5). During this process, both the historical evolution of the basin to its current state and the future development trends need to be considered. A detailed description (data collection) and analysis of both spatial and temporal trends is required. The situation assessment provides the opportunity to narrow the focus of the LUP strategy and develop an understanding of the key land use management concerns.

#### Step 2: Identification of key issues

Basin planning is complex and sometimes it is not possible to address all issues in the entire basin area. It is necessary to identify the key land use related issues and carry out some level of prioritization. Identification and prioritization of issues is an iterative process typically done through the engagement of local stakeholders (stakeholder consultation), political priorities/negotiation dictated by political leaders, expert perspectives of knowledgeable managers and practitioners, and screening from the technical and/or economic analysis during the baseline assessment. Important considerations in assessing the priority of an issue include:

- the severity of the social, economic, and ecological impact of an issue.
- the future expected severity of the issue under changing circumstances.
- the uncertainty associated with current understanding or future implications.
- the feasibility and degree to which basin planning can address the issue.

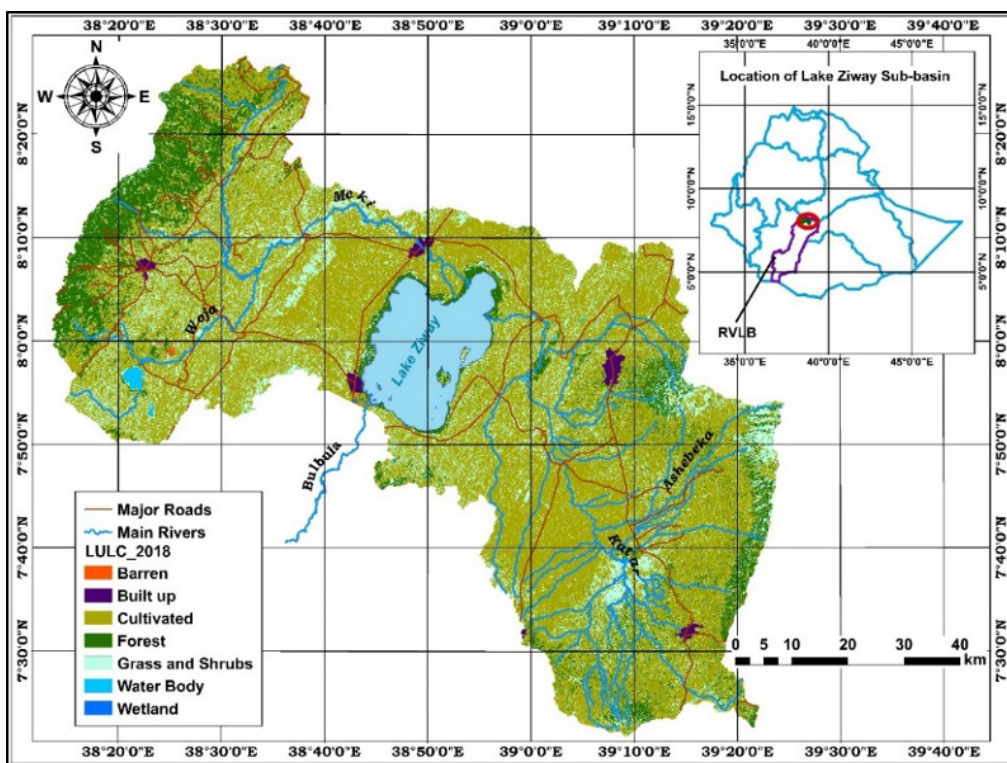


Figure 3.5. GIS assisted resource map: the example from Lake Ziway sub-basin (Source: Girma, 2019).

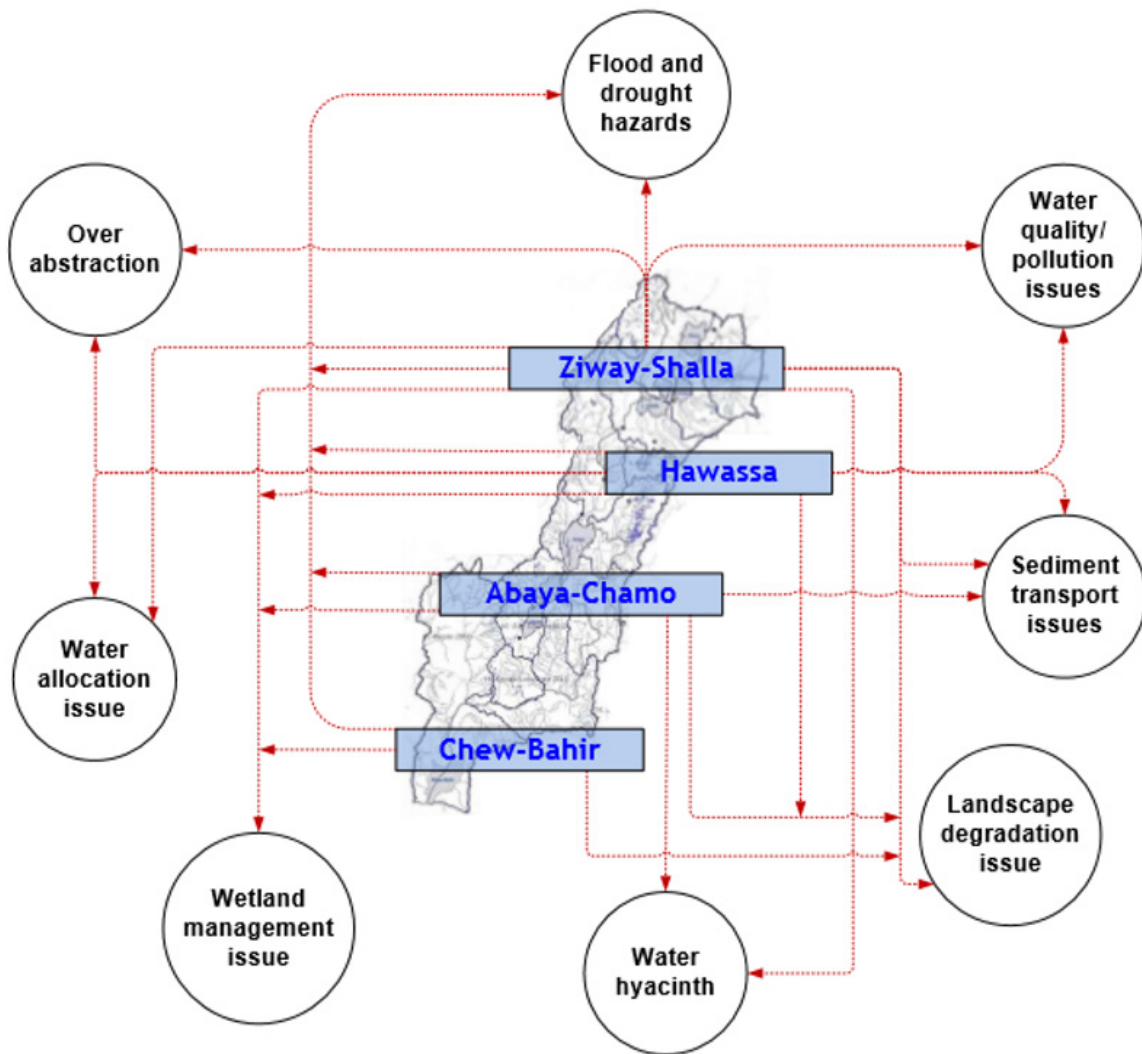
Regarding the Ethiopian RVLB, the key issues include land degradation, population growth, and low agricultural productivity (Halcrow and GIRDC, 2009). Similarly, the Strategic IWRM plan for Ethiopian RVLB 2020-2035, prepared by the Basin Development Authority and SIWI (Figure 3.6) identified four major thematic areas (water resources availability and utilization): water quality, watershed and wetland degradation, and emerging issues such as climate change and water hyacinth).

### Step 3: Land zoning: Delineate management areas

Though the river basin boundary is defined and delineated before the planning process is initiated, it is too large and complex to analyse and manage as a single unit.

Therefore, the basin should be subdivided (land zoning) into sub-basin or management areas. This will help to:

- manage the diversity and complexity of issues and information at the basin scale, by breaking the basin up into coherent and relatively homogeneous parts.
- facilitate the effective planning and implementation of basin-level land resources management, supported by local planning that reflects local possibilities and concerns.
- reflect institutional mandates in different parts of the basin, to enable decentralization of the planning process.



**Figure 3. 6.** Circuit of key issues in Ethiopian rift Valley Lakes Basin (Source: Basin Development Authority and SIWI 2020).

Figure 3.7 shows the eight development Zones of the Ethiopian rift Valley Lakes Basin and proposed land zoning for the western shoreline of Lake Ziway (Halcrow and GIRD Consultants, 2009; Hengsdijk et al., 2009). The criterion used to delineate the basin include (a) current land use, (b) natural resources feature and socioeconomic characteristics, (c) spatial relationships and linkages, and (d) physically contiguous areas.

### Step 4: Develop LUP strategy

The planning strategies should be formulated to address the priority concerns which aim to make optimum use of

land and water resources based on an integrated approach, with minimal adverse social and environmental impacts. The preferred strategies should also be in accordance with national, regional, and sectoral policies, and acceptable to the regional governments, the public and other relevant organisations. This requires the alignment, harmonization or integration of many management themes and disciplines to create a holistic and coherent basin plan. Implementation capacity, as well as the availability of human, financial and institutional resources, should also be considered.

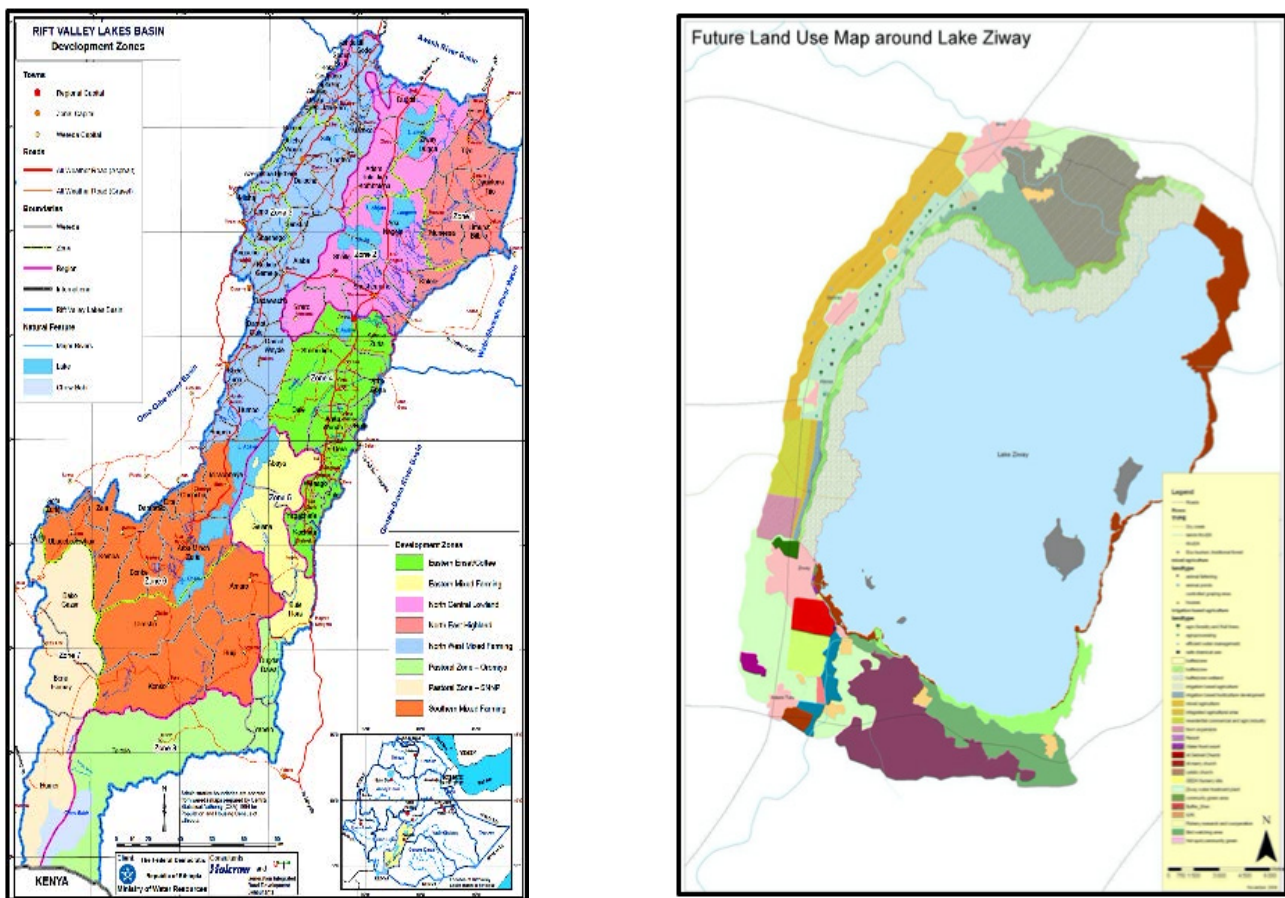


Figure 3.7. Development Zones of the rift valley lake basin (a), proposed land zoning for the western shoreline of Lake Ziway (b).

### Step 5. Implementation of the basin plan, monitoring and review

This step of the PLUP procedure defines the institutional and financial arrangements required to support the

implementation of the basin plan, including the roles of different institutions and stakeholder groups in giving effect to the plan as well as the monitoring systems. Figure 3.8 summarizes the entire processes of PLUP.

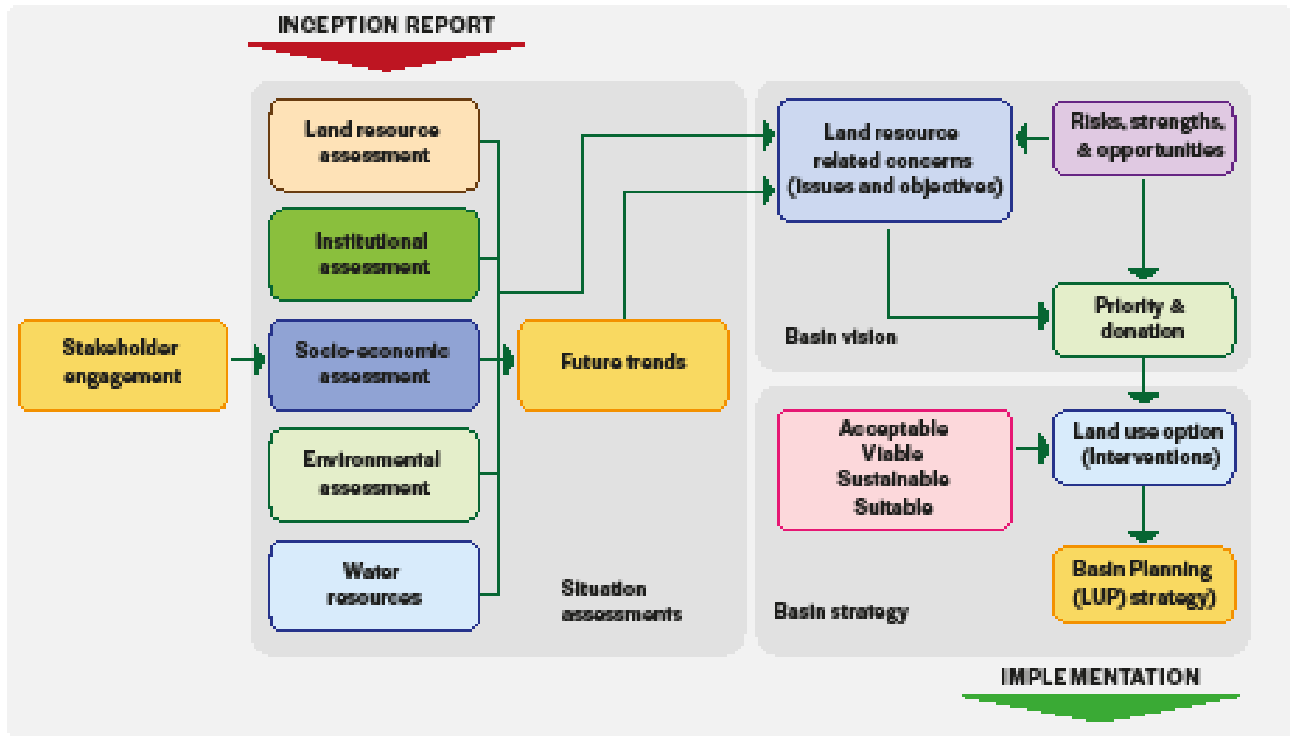


Figure 3. 8. LUP process (Modified from Pegram et al., 2013).

## 3.3. Combining participatory and technical mapping: GIS for PLUP

The analytical and planning phase requires data integration, multi-disciplinary analysis, and more precise information. Geographic Information Systems (GIS), with strong capacity in data integration and analysis and visualization, have become the main tool to support the PLUP approaches (Trung et al., 2006). In participatory mapping, members of the local community and other stakeholders draw maps that reflect the bio-physical features of their surroundings, explain its function, describe trends, and share the social and cultural values attached to it. The mapping process, beyond providing data, information and perspectives in the design and implementation of land use plans, will also help empower

participants, enabling them to monitor activities and evaluate effectiveness of the plan (ERCAND consult, 2019).

### 3.3.1. Participatory mapping

Participatory mapping (for example; Figure 3.9), provides a valuable visible representation of what a community perceives about their environment and the significant features within it. The process of mapping can contribute to building community cohesion, help to engage participants to be actively involved in resource and land-related decision-making, raising awareness about pressing land-related issues and ultimately empower local communities. It attempts to make visible the association between land and local communities. In contrast to the common view of planners and managers responsible for a certain development process, participatory mapping provides the opportunity to represent a socially and culturally distinct understanding of landscapes and include information that is excluded from mainstream maps. Therefore, it can become a medium of empowerment by allowing the local community to represent themselves spatially (Corbett et al., 2009). Box 3.7 summarizes who can participate in participatory mapping and how to handle the process.



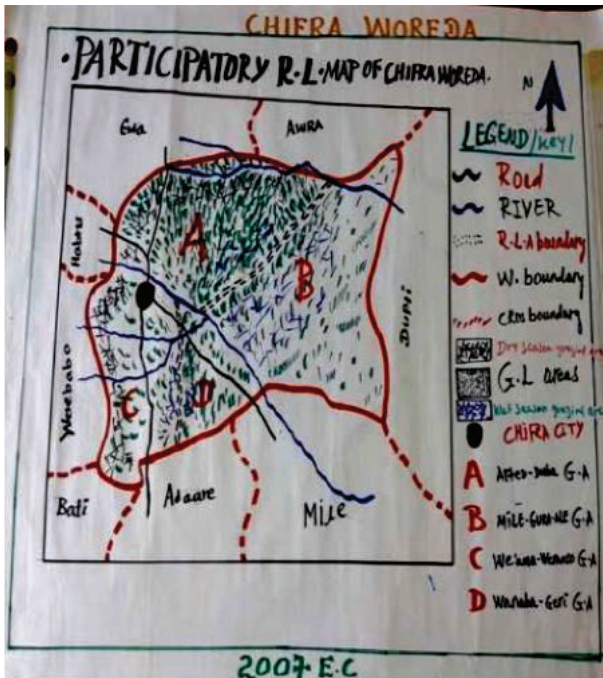


Figure 3.9. Example of a participatory map from Ethiopia (Photo credit: Flintan, 2019).

### Box 3.7 Who Does Participatory Mapping?

Community maps should be drawn by various members of the community to capture different perspectives and issues. Women, men, and children may identify different land use and resource issues. Also, people from different social status and background may have differing perspectives, ideas, and issues. The more people participate in a mapping process, the more insights on the issue can be collected. However, one should keep in mind that an issue becomes more complex and the process of mapping becomes more time consuming, the more people are involved.

### 3.3.2. Participatory mapping tools:

The following mapping tools are common in PLUP processes (Corbett et al., 2009 and ERCAND consult, 2019):

**Ground mapping:** the simplest and least expensive type of participatory mapping. In this technique, participants use locally available materials to draw maps from memory on the ground (Figure 3.10). Despite its simplicity, the maps can be kept for a short time only and are difficult to transfer to a gridded map.



Figure 3.10. Community involved in a ground mapping activity (Source: Corbett et al., 2009).

**Sketch mapping:** drawn on larger pieces of paper and from memory based on data and information taken from participants. It involves drawing key community-identified features and represent the land from a bird's eye view (Figure 3.11). Technically, they do not rely on exact measurements, and do not use a consistent scale or geo-referencing. Simply they show the relational size and position of features.

**Transect mapping:** drawn by collecting data and information over a commonly agreed transect line. The transect line is chosen in terms of its representativeness of land units over the project area when crossed. Participants are asked to travel from start to end of this line and reflect, from time to time, on the present land use history, pros and cons, and visions. The final map depicts a cross-section of the landscape co-related with explanatory information written below each referenced point (Example: Figure 3.12). The main advantage lies in its ability to motivate participants to communicate their specific (mostly by those who came from the area) and shared knowledge and understanding.



Figure 3. 11. Community involved in sketch mapping (Source: Corbett et al., 2009).

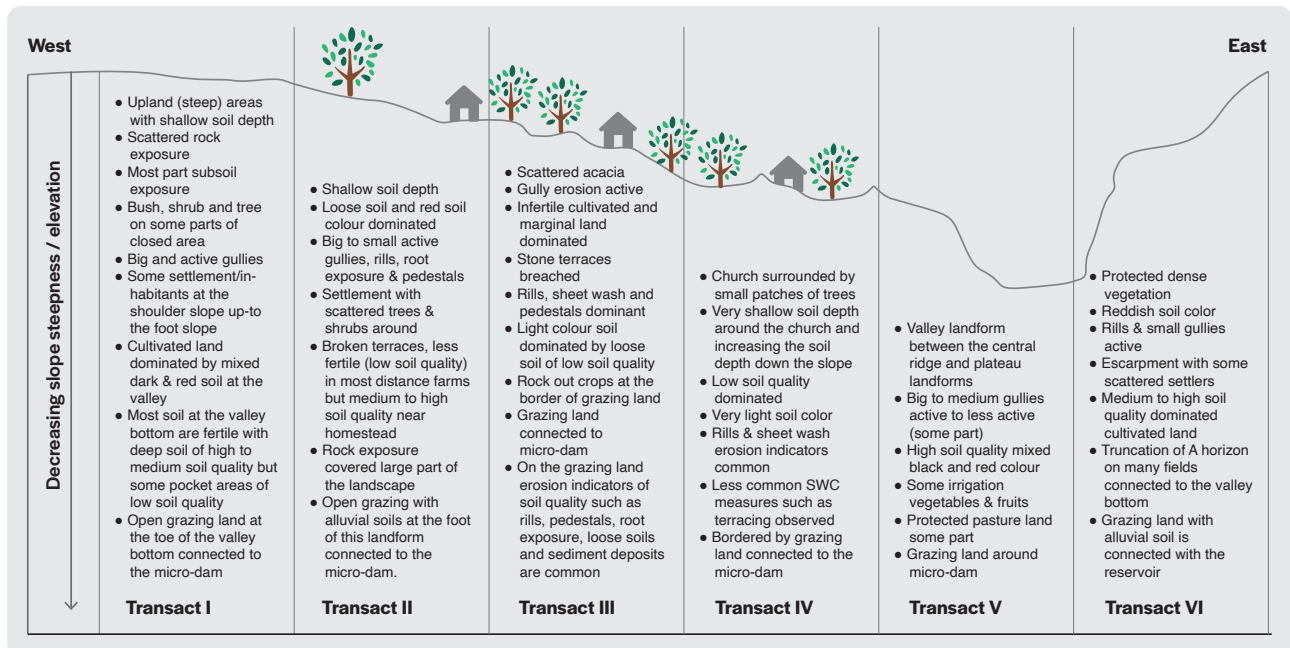


Figure 3. 12. Schema of a transect across the landscape in Tigray, Northern Ethiopia (Tesfahunegn et al., 2011).

**Scale mapping** requires familiarity with other mapping techniques such as sketch mapping and knowledge of compass reading and measuring distance. Scale maps present accurate georeferenced data. A scale map means that a distance measured anywhere on the map always represents (depending on the scale) the equivalent distance on the ground – e.g. 1cm on the map equals 1km on the ground. Scale maps are often referred to as ‘base maps’ by practitioners. A scale map establishes proper boundary lines between land units. Quantitative information, such as area and distance, can be computed from such maps. Moreover, the final map can be easily transferred to other formats, including a GIS platform. It is also possible to add georeferenced information at different phase of the project. Unlike the other tools, scale mapping requires ample time to collect the ground data.

**GPS based mapping** requires an understanding of topographic information and a hand-held GPS. In this type of mapping a sketch map is drawn for the selected area and GPS coordinate points are registered for any turning points. Such data can easily be transferred into a GIS.

**Participatory 3-D modelling (P3DM)** are constructed from the contour on topographic maps. Contour lines are cut from blown up topographic maps (or transcribed upon a cardboard or other similar material). Cut materials are then pasted on top of each other to form a 3-D feature of the landscape. Geographic features are depicted on the model using pushpins (for points), coloured string (for lines) and paint (for areas). On completion, a scaled and georeferenced grid can be applied to allow the data to be transposed back onto a scale map or else imported into a GIS. However, the construction of the model requires ample time and resources.

### 3.3.3. The mapping processes

The following steps (Figure 3.13) are implemented in the participatory mapping process (ERCAND consult, 2009; Corbett et al., 2009):



Figure 3.13. Steps for participatory mapping.

#### Box 3.8 Questions to ask when evaluating participatory maps

The map needs to accurately represent the views and knowledge of the community. It is therefore important to allow community members to evaluate its content and usefulness using:

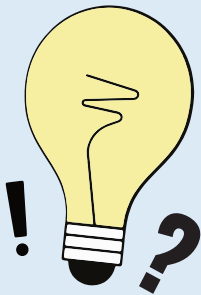
- Should more information have been included on the map?
- Is any information incomplete?
- Is the information displayed on the map accurate?
- What are the most important parts represented on the map?
- What areas need to be improved or addressed?

## Exercise 3.3

**Title:** “Participatory mapping”

**Tasks:**

- Organize and assemble a planning team
- Elect facilitator and note takers from the assembled team
- Select a clean ground to undertake bio-physical/resource mapping
- Collect recognizable materials for delineation of units, sites of social infrastructures and natural features
- Elect a sketch map drawer from the team members
- Ask the map drawer to delineate the boundary of the planning unit with a stick discussing with the community members representatives
- Discuss and agree with all the members on the boundary
- Ask the map drawer to draw rivers, roads, footpaths, settlements, springs, wells, mills, schools, etc falling in their planning unit (one by one)
- Ask the map drawer to draw land cover/ land use types
- Ask all the community representatives to dialogue and agree on units’ boundaries
- Mark unit boundaries and line representations with available local and easily recognizable materials
- Develop legend and naming with symbols preferred by the participants
- Mark north arrow
- Indicate adjacent/neighbouring planning units/Kebeles
- Ask observers and note takers to transfer and sketch the map on papers



**Type:** Group work

**Material:** Flip chart and markers

### 3.3.4. Exploring GIS concepts

A Geographic Information System (GIS) is a computer-based process that facilitates spatial data capture, entry, analysis and displaying in maps, charts, graphs, tables, or words. As a component GIS is the integration of:

**People** – may develop the procedures and define the tasks;

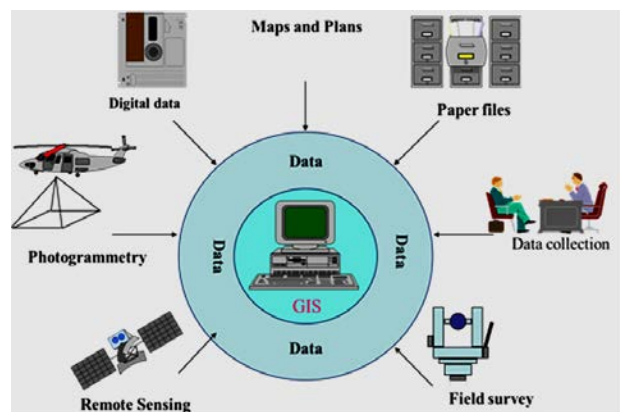
**Data** – it is the input information (Figure 3.14) to be processed;

**Hardware** – the computer and the operating system to run GIS;

**Software** – includes the program and the user interface for driving the hardware,

**Procedure** – is a well-defined methodology.

In GIS, data are represented either in vector (using points, lines, and areas in the form of X, Y coordinate) or raster (assigns values to cells) format (Niwas et al., 2015).



**Figure 3.14.** GIS data sources (Barat, 2013).

## Components of ArcGIS Desktop

ArcGIS Desktop is comprised of a set of integrated applications:

- ArcMap** is the main mapping application which allows you to create/edit maps, query attributes, analyze spatial relationships, and map layouts for printing or publication. ArcMap is also the application you use to create and edit datasets. To start ArcMap (Figure 3.15 and 3.16): Start ▶ Programs ▶ ArcGIS ▶ Click ArcMap ▶ welcome screen ▶ then click OK
- ArcCatalog** organizes spatial data contained on your computer and various other locations and allows for you to search, preview, and add data to ArcMap as well as manage metadata and set up address locator services (geocoding). To start ArcCatalog (Figure 3.12): Open ArcCatalog by selecting start ▶ programs ▶ Arc GIS ▶ ArcCatalog

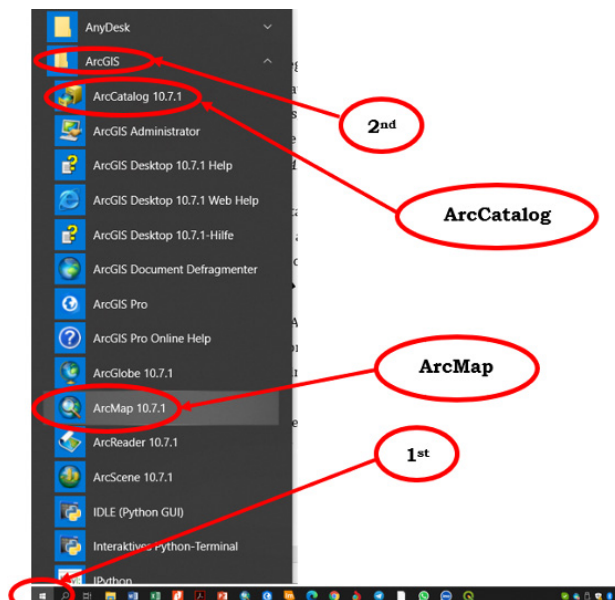


Figure 3.15. Opening ArcMap and ArcCatalog in Windows 10.

- ArcToolbox** is the third application of ArcGIS Desktop. Although it is not accessible from the Start menu, it is easily accessed from the “Menu Bar”. ArcToolbox contains tools for geoprocessing, data conversion, coordinate systems, projections, and more (see Fig 3.13).

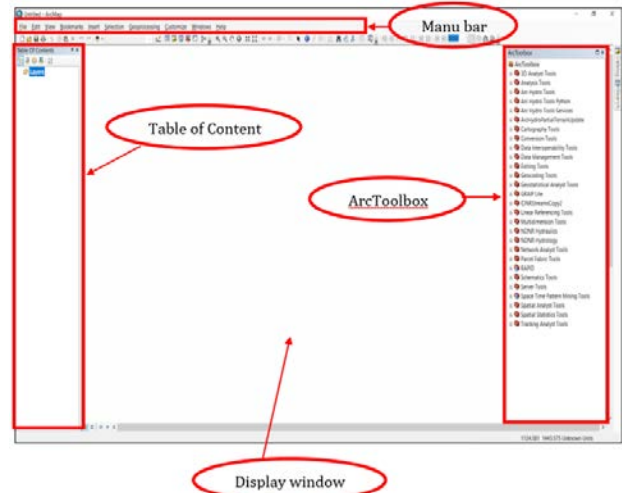


Figure 3.16. Menu bar in the ArcMap.

## Adding spatial data to Arc map

To add data that come from different source: Click File ▶ Add data or Click the Add data button (See Figure 3.17) from the menu bar and navigate to the required data directory ▶ Click Add

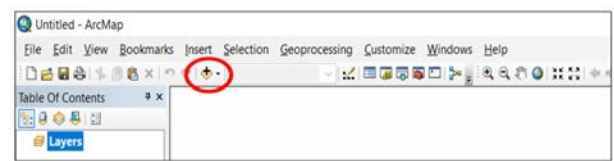


Figure 3.17. “Add data” button.

## Moving around the map display

The toolbar contains buttons that provide zooming functions and allow you to define a custom view of the layer data. Some of the most useful ones are (Figure 3.18): Zoom In – zooms the view window in to a user-defined area; Zoom Out – zooms the view window out from the point clicked; Pan – moves all the view layer layers in the direction you move your mouse. It is a useful tool to view data that is larger than the view window; Full Extent – zooms the view window to the full extent of all layers shown in the view; Zoom to Previous Extent – zooms the view window back to the previous view window extent.

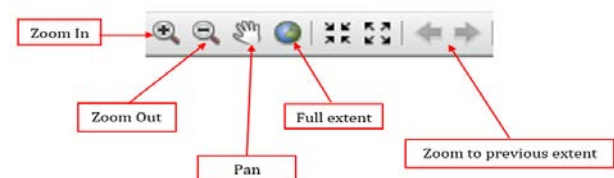


Figure 3.18. Zooming buttons in ArcMap.

## Symbology

It is possible to modify the default symbols, styles and colours so that our map is more presentable and readable. To change symbology, right click on the file in the table of content to bring up the layer properties. The “layer properties” window opens as follows (Figure 3.19). The Layer properties window has several features that allow to edit each layer symbology regardless of type (i.e. point, line and polygon.) Hence, it is possible to change the symbol and colour.

## Watershed delineation

The following steps are implemented to delineate a watershed from a digital elevation model (DEM) in the Spatial Analysis/ Watershed tool (Figure 3.20 and 21):

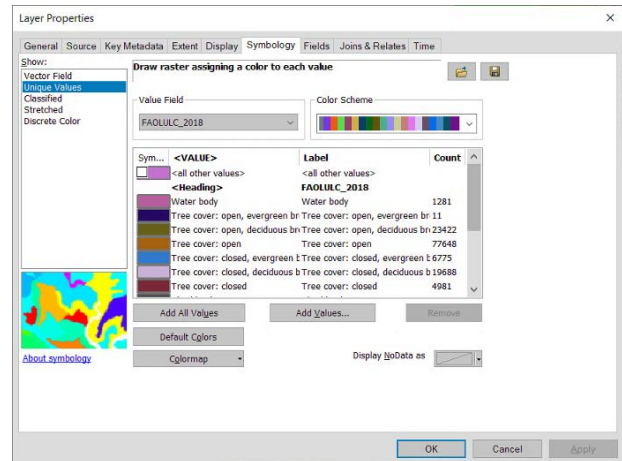


Figure 3. 19. Layer property window.

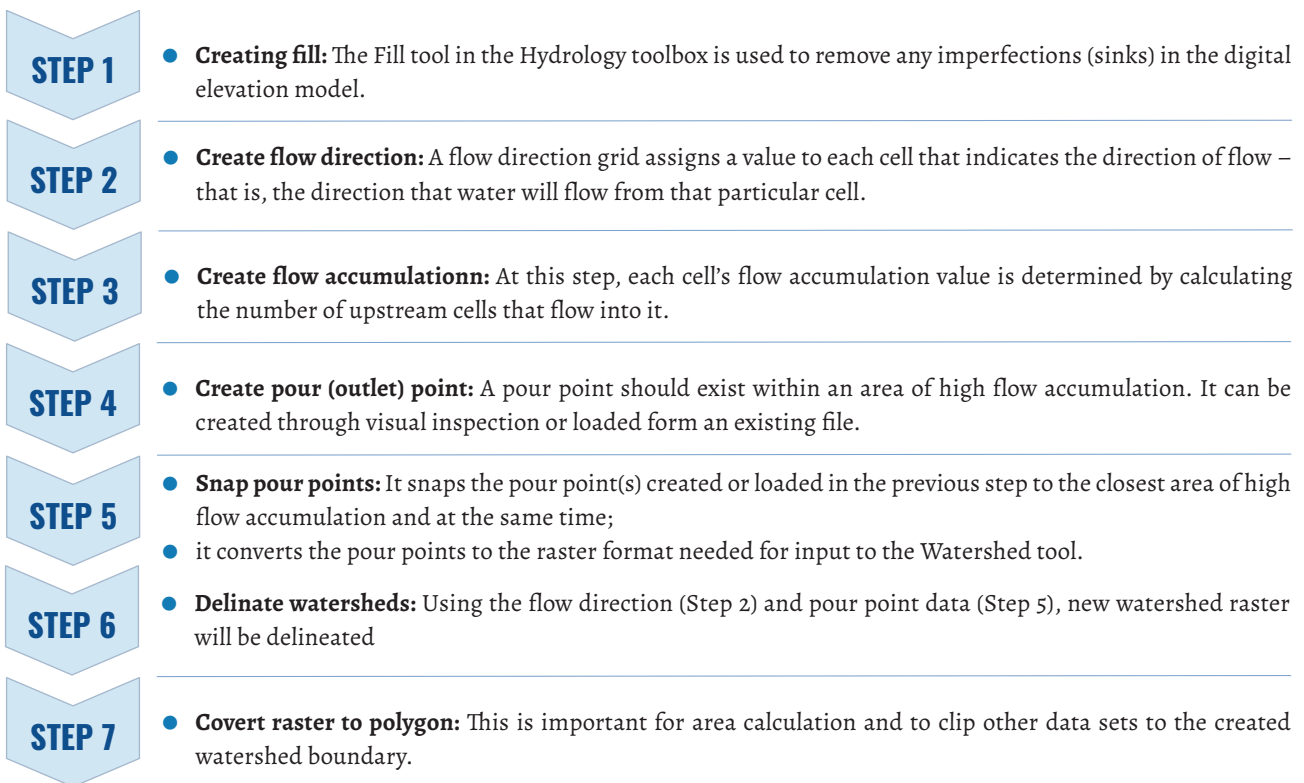


Figure 3. 20. Steps for watershed delineation.

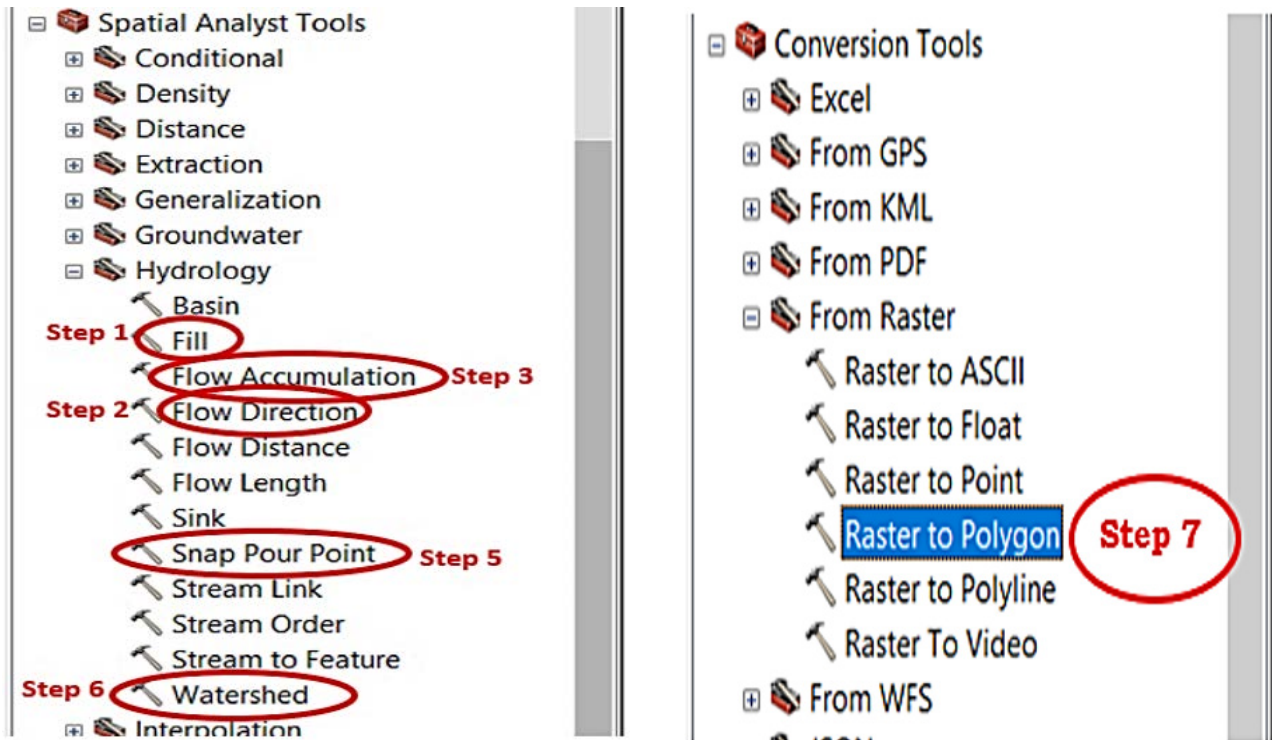
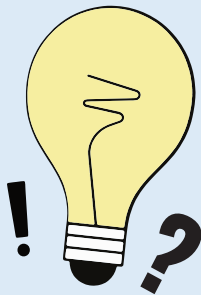


Figure 3. 21. Watershed delineation tool.

## Exercise 3.4



**Title:** "Watershed delineation".

**Tasks:**

- Launch ArcMap
- Load the DEM (from your working directory)
- Implement step 1 to 7 (Figure 3. 20 and 3.21)
- Classify the delineated watersheds with different colors
- Compute area and perimeter
- Save your map document (\*.mxd)
- Export your layout in \*.jpg format

**Type:** Group work

**Data:** DEM

**Material:** Computer, ArcGIS Desktop

# Module 4: Conflict management

This module focuses on types of conflicts related to natural resources use and management, causes and consequences of conflicts, characteristics, and ways of addressing conflicts. It also discusses different tools that can be used to analyse land use disputes and management approaches.

## 4.1. Basic understanding of conflicts

Land conflict refers to opposing interests, activities and impacts on the environment resulting from different goals and objectives of groups and/or individuals (Bruce and Holt, 2011; United Nations Economic Commission for Africa, Eastern Africa Sub-region Office (UNECASRO-EA), 2012; FAO, 2013). Its driving factors include the right to: (a) use/manage the land, (b) generate income from the land, (c) exclude others from the land, and (d) transfer it or the right to compensation for it (Wehrmann, 2008; Mann and Jeanneaux, 2009;). Understanding the specific nature of land conflict under consideration is a vital step in managing conflicts (Wehrmann, 2017).

### 4.1.1. Classification of land conflicts

Land related conflicts can be classified based on land ownership, the specific issues of the conflict, social factors, and the legitimacy of actions. Among the many ways of classifying land conflicts, the one based on the social dimension of conflicts is the most common – especially when it comes to conflict resolution. The classification of conflicts based on the social dimension include: Intra-personal – occurs within us; Inter-personal – occurs between two or more people; Intra-group – occurs within one group; and Inter-group – occurs between two or more groups. Common types of conflicts in Ethiopia related to land and land resources are summarized in Box (4.1).

### 4.1.2. Responses to conflict

Different schools of thought illustrate five different forms of conflict-handling mechanisms (Figure 4.1) (Thomas and Kilmann in 1974; FAO, 1997; Schwedes and Werner, 2010; Liddle, 2017):

- i) **Competition** – is asserting one's viewpoint at the potential expense of another. Competing or forcing has high concern for personal goals and low concern for relationships.
- ii) **Collaboration** – aims at finding some solution that

can satisfy the conflicting parties. Disagreement is addressed openly, and alternatives are discussed to arrive at the best solution. This method therefore involves high cooperation and low confrontation.

- iii) **Compromise** – is a common way of dealing with conflicts. In this case, each party must give up something to gain something else. It is based on the belief that a middle route should be found to resolve the conflict situation, with concern for personal goals as well as relationships.
- iv) **Avoidance** – is based on the belief that conflict is evil, unwanted, or boorish. It should be delayed or ignored. Avoidance strategy has low cooperation and low confrontation.
- v) **Accommodation** – involves high cooperation and low confrontation. It plays down differences and stresses commonalities. Accommodating can be a good strategy when one party accepts that it is wrong and has a lot to lose and little to gain.

### Box 4.1 Causes, types and consequences of conflicts in Ethiopia

Studies (e.g. Teklu, 2004; Bogale et al., 2006;) demonstrated different types of conflicts including conflicts between members of the same household (in particular between father and son), between households (inter-household), and between communities (inter-community). The causes of such conflicts include population growth, degradation of natural resources, poor governance of natural resources, weak government and customary institutions, frequent drought, drainage, and expropriation of rangelands (USAID, 2011; Siyum et al., 2015). According to Siyum et al. (2015), poor interaction and support among farmers, less time for agricultural practices, and loss of agricultural production (about 25% of the agricultural productivity) as well as low local and national development are among the consequences of conflicts.



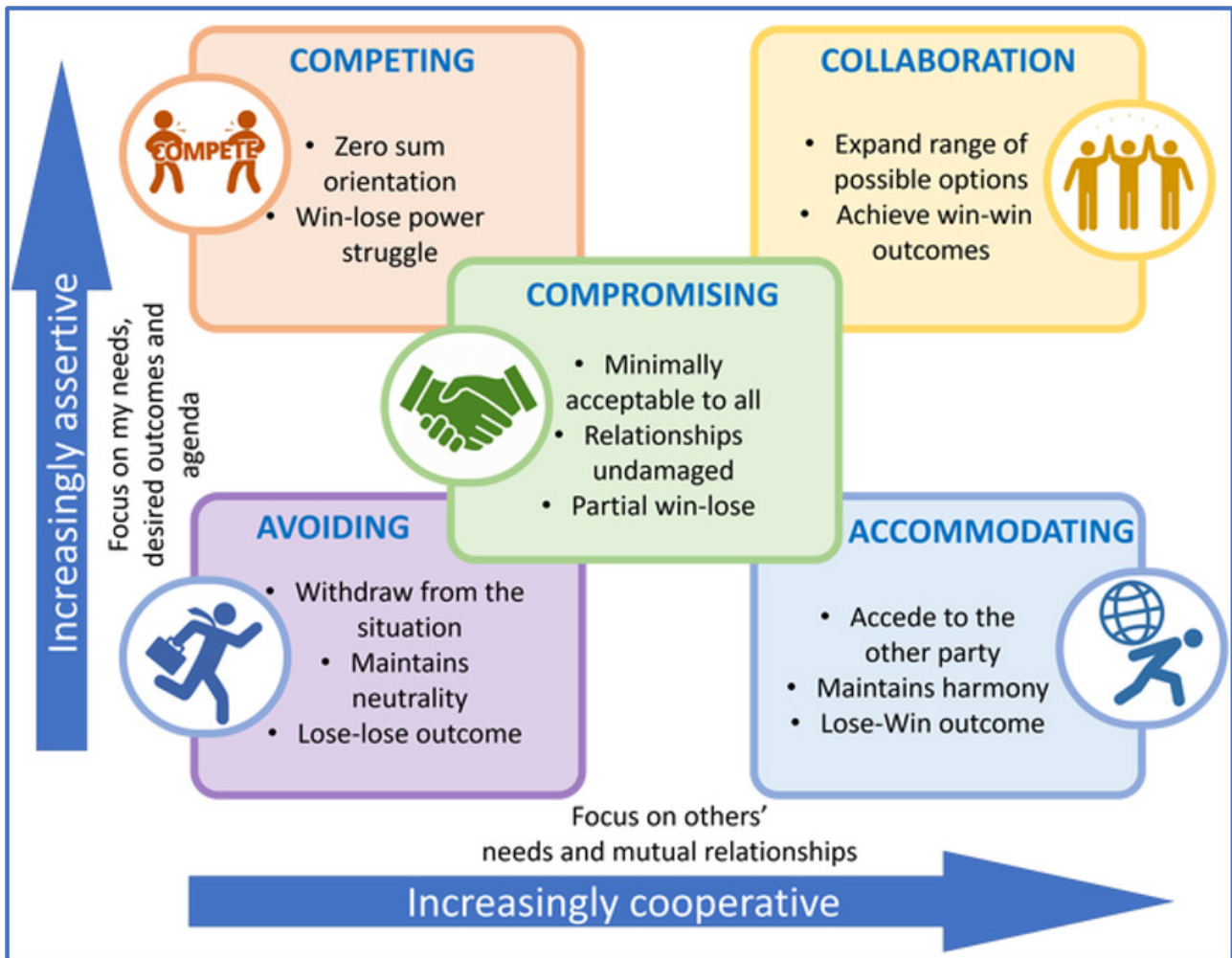


Figure 4. 1. Two-dimensional conflict handling model.

### 4.1.3. Stages of conflict

Conflicts are best thought of as dynamic (ever-changing), and interactive social processes. To be effective, practitioners must analyse each conflict (Figure 4.2) carefully, on a case-by-case basis, and must be sensitive to the different stages as described hereafter (FAO, 2005):

#### Latent conflicts:

Latent conflict refers to social tensions, differences and disagreements that are hidden or undeveloped. This is the stage at which incompatible goals may exist, but parties may either not be acutely conscious of them or not be willing to reveal themselves or their interests in the conflict. They may allow conflict to remain latent because of fear, distrust, peer pressure or financial reasons.

#### Emerged and manifested conflicts:

Conflict can emerge gradually and steadily or develop rapidly in response to a few significant events. As differences increase and intensify, conflict becomes manifest, expanding into a full-blown public issue that cannot be avoided. In the manifest stage, opponents' differences become more prominent and more central to group dynamics. As incompatibilities become clearer, they become the defining issues: debate revolves more and more around differences. Opponents begin to define

themselves and their groups on the basis of such cleavages, in terms of "us versus them". These differences might then be used to mobilize sections of the population on behalf of a "cause".

#### Escalating and violent conflicts:

When a conflict reaches this stage, violence often produces counter-violence, leading to further escalation. Ideally, conflicts should be managed at the latent stage before they emerge or escalate. When a conflict reaches the manifest stage, it may either become blocked in a stalemate or impasse in which the conflict parties refuse to modify their positions or fall out of control through tensions and violent actions.

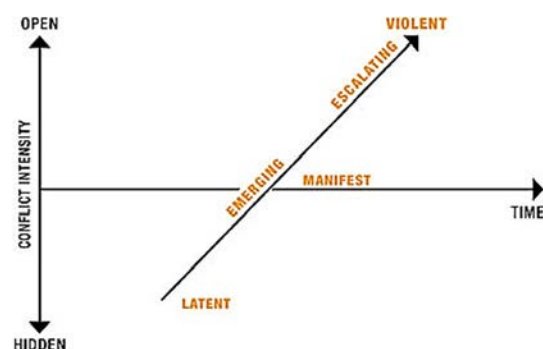
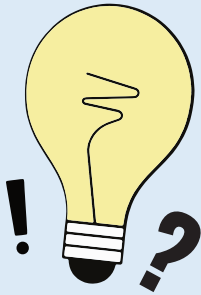


Figure 4. 2. Conflict stages (FAO, 2005).

## Exercise 4.1



### (a) Land related conflicts – Ethiopian context

#### The key discussion points include:

- Think of one land conflict you are well familiar with and identify the conflict parties, their positions, and interests. You may also want to reflect on their fears, desires, and material as well as emotional needs.
- List the land conflicts that you know and identify their consequences. Distinguish between the consequences for the parties involved as well as for the state and the public.
- How do shortcomings in land administration and land management contribute to land conflicts?
- Why are land conflicts at the inter-personal level generally easier to solve than those at the intra-group level?
- Do you think conflicts can have positive impacts? If so, tell your opinion.

### (b) Response to conflicts:

Using Figure (4.1) and its rationalization for choosing one response over the other, think of a conflict where it would be appropriate for you to respond competitively (where achieving your goals is more important than preserving the relationship with the other person in the conflict). Now think of an example where avoiding would be the best response, based on you not being able to achieve your goals, nor being able to enhance your relationship.

- What provides a good example of accommodating?
- Why does it make sense to accommodate in that instance?
- What is an example of when it is most suitable to compromise?
- Why? Finally, think of an example when you might respond to conflict collaboratively and explain why it is the most appropriate response

**Type:** Group work

**Material:** Stationery

## Box 4.2 The role indigenous conflict resolution mechanisms: Lesson from Ethiopia

Indigenous conflict resolution mechanisms are deeply rooted, more flexible and associated with the cultural norms and values of the peoples and gain their legitimacy from the community. The Elders-Shimagelle - or people appointed on ad-hoc basis and the institutions of Gadaa to settle disputes - played an important role in resolving various conflicts and many other problems (Gowok, 2008; Endalew, 2014; Alemie and Mandefro, 2018). Indigenous conflict resolution typically involves consensus building based on open discussions to exchange information and clarify issues about the conflict. Its desired end result is a sense of harmony, solidarity and shared dialogue among conflicting parties.....not punishment. Though the absence of clear policy direction has been found to be a limiting factor, indigenous conflict resolution mechanisms maintain social solidarity among a multi-ethnic and multicultural society. According to Abebe et al. (2015), local communities prefer customary laws than courts due to flexibility, provision of central role to maintain order in the community, and the law itself is more immediate and meaningful to all people concerned since it is developed and imposed by the community itself.

## 4.2. Conflict management approaches

As conflict is argued to have both positive and negative dimensions, the ‘ideal’ goal in conflict management is to attain desirable positive outcomes and reduce/eliminate its escalation to unnecessarily destructive levels (Daniels and Walker, 2001). Thus, conflict management has to mobilize local capacity through the use of various local approaches such as customary laws and regulations, improved negotiation skills and persuasive knowledge (see Box 4.3) (FAO, 2000). A response made locally to conflict is seen as the easiest and quickest available conflict management strategy. The followings are the five common conflict management strategies (Figure 4.3) (CAP-NET, 2008; Schwedes and Werner, 2010):

**Conciliation:** is the attempt by a neutral third party to communicate separately with the disputing parties for the purpose of reducing tensions.

**Negotiation:** is a process where the parties to the dispute meet to reach a mutually acceptable solution. There is no facilitation or mediation by a third party.

**Mediation:** is a process of settling conflict in which an outside party oversees the negotiation between the two disputing parties.

**Arbitration** is usually used as a less formal alternative to litigation. It is a process in which a neutral outside party or a panel meets with the parties in a dispute, hears presentations from each side and makes an award.

**Adjudication** is relying on a judge or administrator to make a binding decision.

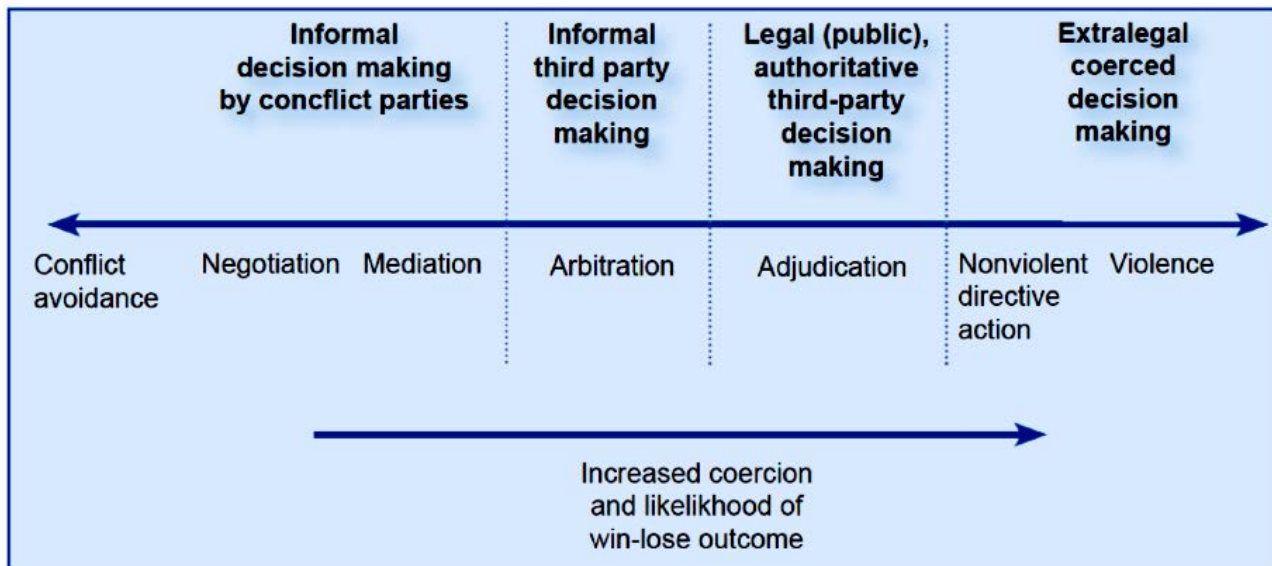


Figure 4.3. Continuum of conflict management approaches (CAP-NET, 2008).

### Box 4.3 Case study: Conflicts in Abijata-Shalla Lakes National Park, CRV-Ethiopia

A study by Fekadu and Fekadu (2014) demonstrated that weak wildlife policy resulting in space competition between wildlife and humans (other forms of land use), limited means of revenue generation for local communities, and enquiry in benefit sharing have accumulated grievance and then conflict between stakeholders in the park. Contested land tenure and overlapping claims generated by ill-defined property rights, as interrelated factors, sustained the conflicts. Weak information sharing, rising demographic pressure and poor implementation of conservation policies, aggravated the conflict. The stakeholders used customary authorities and institutions and introducing a co-management strategy to resolve the conflict and sustain the park.

## 4.3. Tools in conflict analysis

Conflict analysis tools (Example: Figure 4.4 and Box 4.4) can help generating a clear and deep understanding of the underlying causes of a conflict, cause(s), consequences, actors involved (including their positions, interests, needs, fears and desires), and their relations with each other, crucial to comprehend land related conflicts (Wehrmann, 2017). It is useful to look at land conflicts from a historical perspective to understand its development over time and who is part of the problem. It is also very important to identify the current stage of the conflict to be able to choose the appropriate intervention or dispute resolution. It should be done in a participatory way to enhance the analytical and problem-solving capacities of the conflict parties. It is suggested to use at least the following four tools of conflict analysis (Box 4.4):

### Box 4.4 Tools in conflict analysis (Schwedes and Werner, 2010)

**Conflict onion (Figure 4.4)** – helps to identify the underlying interests, needs and fears to a position that a conflict party holds up and can either be applied by the mediator’s team alone (after specific interviews) or with the stakeholders.

**Conflict analysis table** – helps to analyse different aspects of a conflict. The mediator’s team should work with this tool alone and not use it as facilitation aid. They will rely on the information received from interviews and discussions with the conflict parties.

**Conflict map** – can be used to show the geographic set-up where the land or resource use conflict exists or may exist in future. It can also help to determine the main issues the conflict is about and should be applied whenever a conflict has a spatial dimension.

**Actor analysis** – helps to identify all the stakeholders involved. It should be applied with each conflict party.

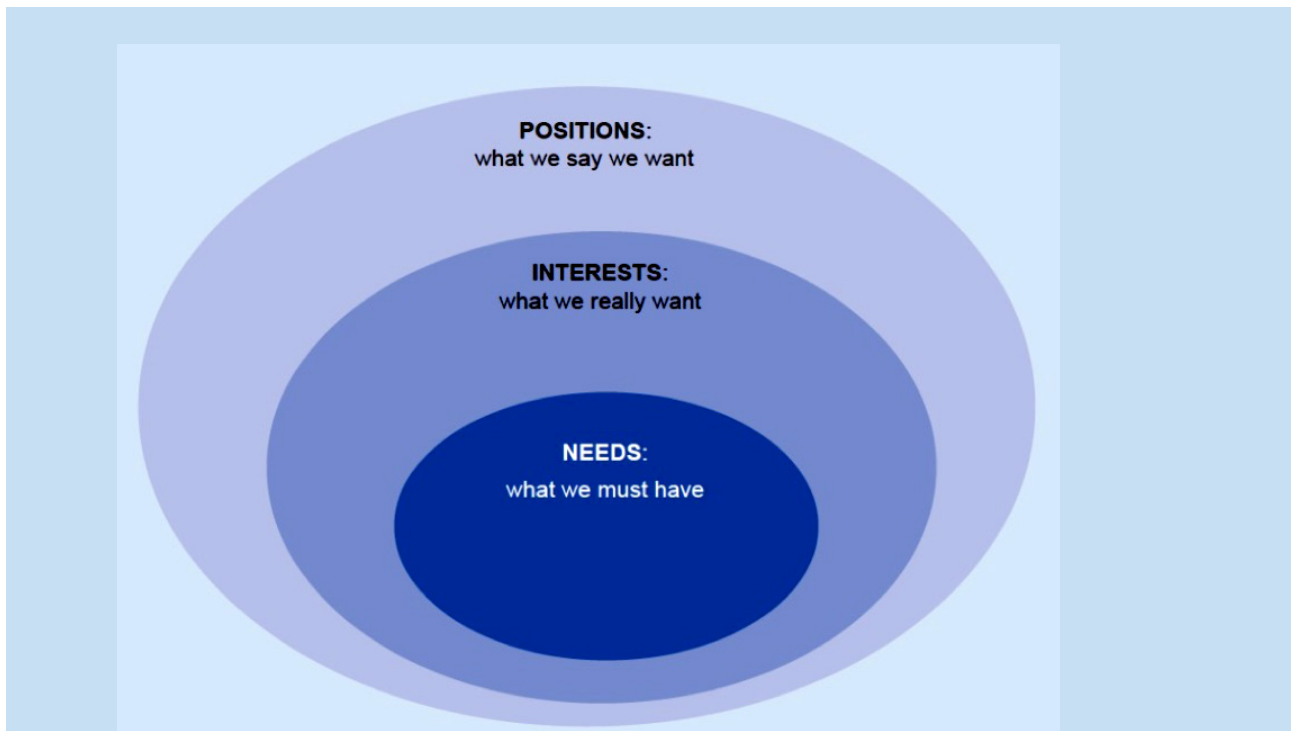


Figure 4. 4. Onion Tool (CAP-NET, 2008).

## 4.4. Water related conflicts and management

With the growth of population and economic development, demand for water grows and is creating stress on the finite resource - water. If adequate measures to improve water-use efficiency and to conserve scarce water resources (either physical or economic scarcity) are not taken, attaining water security is difficult (Box 4.5). The competing water needs causes conflicts (CAP-NET, 2008) and climate change is expected to exacerbate the problem as it alters rainfall patterns. Water related conflicts can occur on different levels: local, national, regional, and global.

Several development initiatives provide lessons for tackling water-related conflicts and fostering cooperation. Establishing an equitable and sustainable water management policy has proven very effective. It includes demand-side management, stakeholder participation, basin-level analysis, and transparent decision-making. Effectively implementing these principles can help prevent and mitigate conflicts. As conflicting interests are inherent in water resources management, conflict resolution mechanisms should be integrated into any water-related development project (Kramer, 2004).

### Box 4.5 Case study: Central Rift Valley (CRV)

The CRV consists of a cascade of lakes, streams, and wetlands. Being a closed basin, the CRV is one of the environmentally very vulnerable areas in Ethiopia (Halcrow and Generation Integrated Rural Development Consultants (GIRDC), 2009). Recently, smallholder irrigation schemes have been implemented in the area. This creates shortage of water resources for irrigation and processing purposes. Hence, the increasing pressure on land and water resources intensifies conflicts between various stakeholders. The associated increase in water extraction/abstraction from surface water and groundwater resources puts an increasing claim on scarce water resources in the area (Shumet and Mengistu, 2016). The major threats that are common and need due attention are water use conflict and unplanned land use (Lemma, 2016). Poor water management already exerts a cost on local livelihoods, for example through loss of productive agricultural land or conflict between local water users. Within rural settings, water scarcity is set to become more pronounced as a result of the rapidly growing population, assuming people start using more water through better services and perhaps access to small-scale irrigation, and unless efforts are made to improve water management. This is likely to lead to increased incidences of conflict between local communities and pastoralists, as already observed in the Rift Valley Basin (Halcrow and GIRDC, 2009). In certain 'hotspots', such as the Awash River Basin, instances of conflict between downstream and upstream irrigators, and/or between water uses for irrigation and hydropower generation, are already evident (Mosello et al., 2015).

# Module 5: Contribution of Land Use Planning to Sustainable Natural Resources Management

This module of the course material discusses the contributions of PLUP to implementation of integrated water resource management (IWRM) and landscape restoration.

## 5.1. Participatory land Use Planning: An Instrument for Integrated Water Resources Management

Land use activities modify the landscape and bring changes in the hydrological processes. This may lead to environmental consequences (See Box 5.1). PLUP assists to understand threats to water resources, and to identify its potential consequences and management options. For example, PLUP policies can help to protect groundwater sites or floodplains through zoning approaches. Hence, PLUP is considered as a key component that systematically assists in the implementation of IWRM (Mitchell, 2005). The establishment of coordinated strategies (integration) between LUP and water resource management is vital to reduce threats to water resources (example; protection of non-point source pollutions) (Schuler and Holland, 2000; Wang, 2001; Ivey et al., 2002; Tarlock, 2002). According to Wang (2001), PLUP promotes the prevention of pollution from happening in the water bodies through the implementation of management options such as erosion and sediment control. Several case studies have demonstrated that PLUP is often a low-cost option for safeguarding and enhancing the water environment, particularly in comparison to the provision of infrastructure such as water treatment plants or structural flood defences for example.

## 5.2. Land Use Planning: An Instrument for forest and landscape restoration

Forest and Landscape Restoration (FLR) can improve the resilience of land and communities in the face of increasing environmental degradation and climate change (Pistorius et al., 2017). PLUP can be used as a forest management and conservation tool (Box 5.2) (UISso et al., 2018). A PLUP

strategy has been used as an operational method to stimulate continuous interaction between stakeholders in FLR problem-solving activities. The key features of the PLUP process, in FLR, are negotiation and the development of a partnership between all concerned parties. Conducting a PLUP can lead to strengthening of the local community for managing forest resources (Lemenih et al., 2015; GIZ, 2016). Land use zoning (for example: zoning of forest land into different forest categories) at different level (Example 1 in Box 5.2) provides a promising approach to implement more detail forest management and landscape restoration work. Accordingly, sustainable FLR approaches rely on the results and various outputs of PLUP. It can therefore not be dissociated from PLUP (GIZ, 2016). Many studies (See example 2 in Box 5.2) have indicated that there were significant improvements in forest management and conservation after the implementation of PLUP.

### Box 5.1 Case study: Land use threats to the Central Ethiopia Rift Valley Lakes

Several studies have shown that the CRV lakes and most freshwater ecosystems are seriously affected by different factors – mainly anthropogenic. The major threats to the CRV lakes are the increasing demands for more land and water resources; land use land cover (LULC) change: agricultural land expansion at the expense of woodlands, a decrease in water bodies and forest, overgrazing; land development: industrialization, investment and urbanization. This has resulted in degradation, increased sediment load and pollution in the lakes. An opportunity to reduce these different threats to the CRV lakes are to put into action a comprehensive participatory land and water management plan, as well as adopting regulations controlling land use and management (Pascual-Ferrer et al., 2014; Hayal et al., 2017; Elias et al., 2019; Lemi, 2019).

## Box 5.2 PLUP to promote conservation of forest

**Example 1:** To control deforestation in the Amazon region, a LUP strategy was developed that involved the following three different interlinked levels:

- Federal/national level: Ecological and economic macro zoning of land use; defines the strategies and rules
- State and local level: Local participatory zoning and planning of land use; influenced by local decisions and negotiations
- Farm level: Land use planning and environmental control of rural areas.

**Results achieved:**

- Reduced deforestation;
- Long-term conflict prevention
- Decentralization of the environmental administration

### **Example 2: Conservation of tropical forest**

**Key issues:** forest fires, illegal logging, the exploitation of flora and fauna, and the advancing agricultural frontier.

**Tool:** LUP, taking environmental protection into consideration, devised to promote protection and sustainable use of forest land.

**Outcome:** PLUP conducted at the community level enables civil society groups, to contribute to the development of the plans. That raises the level of acceptance of the plans and significantly improves their chances of successful implementation. LUP, in this context, leads to the subsequent development of management plans for sustainable use and forest protection, improve forest-fire prevention, and create alternative income sources.

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