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Spatial and Land Use Planning: *Concepts and Frameworks*

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Overview

This document provides a comprehensive investigation into the concepts, similarities, differences, and frameworks of land use and spatial planning, both crucial for sustainable development. It aims to offer insights for policymakers, urban and land use planners, and practitioners to develop effective and sustainable planning strategies.

Land Use Planning involves the systematic evaluation and designation of land for various uses based on economic, environmental, and social criteria, aiming for efficient and sustainable land resource utilization. Its historical evolution began with early zoning laws in the early 20th century, progressing through comprehensive planning and a recent shift towards environmental sustainability. Key goals include mitigating land use conflicts, promoting economic development, and preserving natural and cultural resources.

Spatial Planning is a broader, more holistic approach that strategically organizes space. It integrates land use with transportation, infrastructure, environmental sustainability, and socio-economic factors to create harmonious and resilient urban and rural areas, enhancing quality of life. Its development emerged in the mid-20th century, notably in post-War Europe, and has integrated environmental and social goals, benefiting from modern technological advancements like Geographic Information Systems (GIS). Spatial planning focuses on holistic integration of policies, enhancing quality of life, protecting natural resources, and promoting social equity and inclusion.

Both approaches are essential for sustainable development and share common objectives, such as creating sustainable, efficient, and equitable environments. They prioritize sustainability, emphasize public participation, involve the integration of policies (such as transport and housing), and rely on regulatory frameworks. However, they differ significantly in scope and scale. Land use planning typically focuses on specific land parcels or localized areas, dealing with zoning and site-specific developments. In contrast, spatial planning has a broader scope, addressing regional, national, or even transnational spatial organization with a more holistic and strategic nature. Spatial planning places greater emphasis on aligning spatial policies with broader economic, social, and environmental goals, while land use planning often focuses more on immediate regulatory compliance. The integration of both is crucial, with spatial planning providing the overarching strategic framework and land use planning translating these strategies into practical guidelines at the local level.

Spatial planning is performed at national, regional/state, and local levels, with responsibilities allocated according to the principle of subsidiarity, where decisions are ideally made at the lowest feasible level. Key instruments include planning tools balancing commitment and flexibility, legal frameworks that enable an "integrative spatial planning approach," policy statements, spatial strategies, spatial framework plans, and land-use regulations for development management. Methods include GIS, remote sensing, spatial modeling, scenario planning, and participatory planning. Land use planning also employs methods like zoning, master planning, and various approaches such as top-down, bottom-up, and integrated planning.

Common challenges in planning include urban sprawl, environmental degradation, and resource management. However, opportunities exist in developing smart cities through technology and data, integrating green infrastructure, promoting integrated transport planning, adopting renewable energy integration, building resilient cities, and fostering participatory planning and social equity.

Successful case studies, such as Singapore, Curitiba (Brazil), the European Spatial Development Perspective (ESDP), and Melbourne 2030 (Australia), highlight the importance of integrating

land use and transport planning, ensuring stakeholder participation, incorporating sustainability and resilience principles, and adopting innovative approaches. Germany's highly regarded spatial planning system serves as a best example, demonstrating a decentralized yet coordinated system with multi-level planning (Federal, State, Regional, Municipal) founded on strong legal frameworks and public participation.

Recommendations for future planning include promoting integrated planning approaches, fostering stakeholder participation, aligning with sustainability goals, adopting innovative solutions, focusing on resilience, promoting equity and inclusion, and encouraging knowledge sharing.

Key words: Spatial Planning, Land Use, Sustainable Development, Integration, Governance

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1 Introduction

Land use planning and spatial planning are two interconnected fields essential for sustainable development. Land use planning involves systematic evaluation and designation of land for various uses based on economic, environmental, and social criteria. It aims to ensure that land resources are utilized efficiently and sustainably, mitigating conflicts, and promoting orderly development.

On the other hand, spatial planning is a broader and more holistic approach. It involves the strategic organization of space to balance the needs and activities of the population, considering not just land use but also transportation, infrastructure, environmental sustainability, and socio-economic factors. Spatial planning aims to create harmonious and resilient urban and rural areas that improve the quality of life of all residents.

The importance of these planning processes cannot be overstated. Effective land use and spatial planning contribute to sustainable development by ensuring that development meets current needs without compromising future generations. They also play a crucial role in environmental protection by reducing the environmental impact of human activities and promoting the conservation of natural resources and biodiversity. In addition, these planning processes improve economic efficiency by optimizing the use of land and resources to support economic growth and development. Finally, they promote social equity by ensuring that all members of society have access to essential services, amenities, and opportunities.

The literature supports the importance of land use and spatial planning in achieving sustainable development. According to the United Nations Human Settlements Program (UN-Habitat), well-planned urbanization is essential for sustainable development, as it can reduce the environmental footprint of cities, improve economic productivity, and improve quality of life ([Habitat, 2016]).

As land use and spatial planning are important to inform sustainable development, it is equally important to have a conceptual and methodological framework to guide actual land use and spatial plans at national and local levels. The main purpose of this document is therefore to provide conceptual and methodological insights for policy makers and planners while making decisions relevant to spatial and land use planning, implementation, monitoring and evaluation. It seeks to provide a comprehensive understanding of planning processes, including their theoretical foundations, methodologies, and practical applications, including similarities and differences associated with land use and spatial planning.

Specifically, the document aims:

- Define and explain the key concepts of land use and spatial planning.
- Compare and contrast the similarities and differences between these two planning approaches.
- Examine the theoretical frameworks on which land use and spatial planning are founded.
- Discuss the methodologies and approaches used in both fields.
- Analyze regulatory and policy frameworks at the international, national, and local levels.
- Identify challenges and opportunities within land use and spatial planning.
- Highlight studies and best practices from various regions.

By achieving these objectives, this study aspires to provide valuable insights that can assist policymakers, urban and land use planners, and practitioners in developing effective and sustainable planning strategies

similarities and differences between spatial and land use planning are attempted to be addressed through literature review and systematically analyzing academic definitions, legal interpretations, and practical applications. In order to provide practical insights on how different countries implement land use and spatial planning, experiences from Europe, North America, and Asia are incorporated into this document.

2 Historical Overview

2.1 Evolution of Land Use Planning

Land use planning has undergone significant transformation over the past century. Initially, it emerged as a response to the chaotic and unregulated growth of urban areas during the Industrial Revolution. Early efforts focused on zoning laws designed to separate incompatible land uses, such as residential areas from industrial zones. This zoning approach aimed to improve public health and safety by reducing the negative impacts of industrial activities on residential communities.

Key milestones in land use planning that are worth mentioning include the Early Zoning Laws of the early 20th Century in the United States where the first comprehensive zoning ordinance was enacted in New York City in 1916. It aimed to regulate building heights, lot sizes, and land uses to promote orderly development and protect property values ([Graber and Birmingham, 2009]).

The Garden City Movement (Early to Mid-20th Century) which was initiated by Ebenezer Howard in the UK advocated for self-contained communities surrounded by greenbelts. This approach aimed to combine the benefits of urban and rural living, promoting healthier and more sustainable environments ([Hall, 2011]).

The Comprehensive Planning concept (Mid-20th Century) which emphasized the need for long-term strategic plans that address various aspects of urban development, including land use, transportation, housing, and infrastructure. This period also saw the rise of master planning and the use of land use maps to guide development ([Kaiser et al., 1995]).

Lastly, the Environmental Sustainability (Late 20th to Early 21st Century) principle through which the focuses of land use planning has shifted towards sustainability. Planners now incorporate environmental considerations, such as the conservation of natural resources, reduction of carbon emissions, and resilience to climate change. Sustainable land use planning seeks to balance economic development with environmental protection and social equity ([Campbell, 2003]).

2.2 Historical Development of Spatial Planning

Similarly, spatial planning, as a broader and more integrative approach, has also evolved significantly. It emerged in the mid-20th century as a response to the limitations of traditional land use planning, which often failed to consider the complex interactions between different sectors and regions.

The major historical developments in Spatial Planning include the Post-War Reconstruction (Mid-20th Century) in Europe after World War II which led to spatial planning becoming an essential instrument for rebuilding war-torn cities and regions. European countries, in particular, adopted spatial planning to coordinate reconstruction efforts and promote regional development. The emphasis was on creating balanced and integrated urban-rural systems ([Faludi, 2013]).

Another important development is the European Spatial Development Perspective (ESDP, 1999) which laid the milestone in the development of spatial planning in Europe. It provided a framework for achieving balanced and sustainable development across the European Union. The ESDP emphasized the importance of territorial cohesion, polycentric development, and sustainable urban systems ([Faludi, 2000]).

With growing awareness on the importance of environmental and social issues, the integration

of Environmental and Social Goals (Late 20th Century) in Spatial Planning became imperative. Spatial planning, therefore, started to integrate environmental and social goals, recognizing the interconnections between land use, transportation, housing, and environmental sustainability. The concept of "smart growth" emerged, promoting compact, mixed-use development and efficient land use to reduce urban sprawl and enhance quality of life ([Burchell et al., 2002b]) et al., 2002).

Current technological advancements (21st Century) in Geographic Information Systems (GIS) and spatial modeling, have transformed spatial planning. These tools, which are continuously developed and refined, have enable planners to analyze complex spatial data, simulate different development scenarios, and make informed decisions. The use of GIS has enhanced the ability to plan for resilient and adaptive communities in the face of climate change and other challenges ([Batty, 2013].

3 Key Concepts of Land Use and Spatial Planning

3.1 Definitions and Core Principles

Land use planning and spatial planning share fundamental principles but differ in scope and application. Below, the key concepts and core principles of each are discussed.

3.1.1 Land Use Planning

Land use planning involves the systematic assessment and regulation of land to ensure its optimal and sustainable use based on economic, environmental, and social criteria. It is founded on the core principles of sustainability, aimed at ensuring that land use supports long-term environmental health and resource availability. This approach enhances efficiency by seeking to utilize land in a manner that maximizes its potential while minimizing waste and negative impacts. It also promotes equity by enabling fair access to land and resources for all segments of society and engages all stakeholders and the community in the planning process to ensure that decisions reflect public interests ([Platt, 2014], [Campbell, 2018], [Kaiser et al., 1995], [Albrechts, 2004], [Wehrmann, 2012], [Platt, 2014]).

3.1.2 Spatial Planning

Spatial planning is a comprehensive approach to organizing space that integrates land use with transportation, environmental sustainability, and socio-economic policies to create balanced and resilient development.

The core principles of spatial planning include integration, territorial cohesion, sustainability, and adaptability. Integration involves coordinating various policies and sectors to achieve cohesive development. Territorial cohesion ensures balanced development across regions, reducing disparities and promoting equitable opportunities. Sustainability incorporates environmental, economic, and social sustainability into planning processes. Adaptability focuses on planning for resilience and the ability to adapt to changing conditions, such as climate change or economic shifts ([Alem, 2021], [Nadin, 2006], [Faludi, 2004], [Pahl-Weber and Henckel, 2008], [Stead and Nadin, 2008]).

3.2 Goals and Objectives

3.2.1 Land Use Planning

The primary goals of land use planning include the efficient and sustainable use of land resources, which involves maximizing the productivity of land while ensuring its long-term viability. It also aims to mitigate land use conflicts by reducing disputes between incompatible land uses through zoning and regulations.

Additionally, land use planning promotes economic development by facilitating economic activities that provide jobs and contribute to economic growth. Lastly, it focuses on the preservation of natural and cultural resources, protecting valuable ecosystems, historic sites, and cultural heritage. According to Campbell ([Campbell, 2003]), sustainable land use planning balances economic growth, environmental protection, and social equity to achieve just cities. Berke and

Godschalk ([Kaiser et al., 1995]) emphasize the importance of incorporating hazard mitigation and resilience into land use planning to address natural disasters and climate change.

3.2.2 Spatial Planning

The primary goals of spatial planning include the holistic integration of policies, which involves coordinating land use, transportation, housing, and environmental policies to create comprehensive development strategies. It also aims to enhance the quality of life by improving living conditions, access to services, and overall well-being for residents. Additionally, spatial planning focuses on the protection and conservation of natural resources, ensuring the sustainable management of land, water, and biodiversity. Lastly, it promotes social equity and inclusion by addressing social and regional inequalities and ensuring all community members benefit from development.

Healey ([Healey, 2020]) highlights the role of collaborative planning in achieving integrated and inclusive spatial development. Faludi ([Faludi, 2010]) discusses the concept of territorial cohesion and its importance in European spatial planning for reducing regional disparities and promoting balanced development.

4 Comprehensive Overview of Spatial Planning

This section provides a comprehensive overview of spatial planning, a crucial discipline for sustainably organizing and managing land and resources. It begins by defining spatial planning and exploring its key elements, including land use, infrastructure, and environmental considerations. The chapter then examines the guiding principles, tools, and levels of spatial planning, from local to national scales, and discusses how to effectively implement spatial plans by translating them into actionable policies and projects to address contemporary land use challenges. This section further explores the relevance of spatial planning within the Ethiopian context, examining its concepts, features, and practical implications. The scope encompasses its definition, principles, and the process involved, comparing it with conventional land use planning to highlight its advantages. Furthermore, the chapter discusses methods and techniques employed in spatial planning, such as GIS, remote sensing, and participatory planning, showcasing their relevance in addressing Ethiopian development goals.

Spatial planning encompasses a range of activities and strategies aimed at guiding the spatial organization of urban and rural areas, ensuring efficient land use, promoting sustainable development, and enhancing the overall quality of life for residents. Spatial planning aspires to be an interdisciplinary and cross-cutting coordinator of sectoral policies and decisions with spatial impacts, including those concerned with the environment, infrastructure and regional economic promotion.

It is generally institutionally anchored on at least two spatial levels (municipal and national). In addition, there are greatly varying forms of organization on the regional planning level in different countries ([Reimer et al., 2014]). It goes beyond traditional land use planning by considering the broader spatial context and integrating sectoral, social, economic, and environmental factors into the spatial decision-making process. It plays an important role in improving national and local system of urban and rural development ([Stead and Nadin, 2008], [Tewdwr-Jones, 2017], [Albrechts, 2004], [Nadin and Stead, 2008]).

Spatial planning, as public activity, has both regulatory and development functions in which the approval of the government of a proposed development activity at local, regional and/or national levels is the regulatory function. On the other hand, the role of the government's decision to avail development tools for providing services and infrastructure, for establishing directions for urban development, for preserving national resources, and for establishing incentives for investment to mention the few bestows the development functions of the government([Stead and Nadin, 2008]).

Spatial planning enables the achievement of a number of social, economic, physical and environmental objectives. Some examples include; the promotion territorial integration through enhancing balanced socioeconomic development between regions, enhancing urban development and its integration with rural areas, improve and ensure equitable accessibility, protect natural and cultural heritages, mitigate environmental damages and promote sustainable development ([Stead and Nadin, 2008]).

Spatial planning is performed at national, regional/state and local levels. At national level, the government formulates development frameworks and policies that guide the decision making process and sets the preconditions for effective implementation of the planning process at the lower tiers of government. Some of the major tasks at national level are the establishment of the legal framework, setting the framework for coordination between sectors and between regions with in the country, developing the framework for monitoring the implementation of national guidelines and principles at state, regional and local levels, provision of support for regional and local authorities through capacity building, professional advice and political leadership

that will facilitate the implementation of national guidelines as well as in the identification of main challenges in planning and implementation.

At a regional level, regional governments are responsible for the preparation and coordination long-term regional strategy that will guide the development of the whole region. This must be done in close consultation and cooperation with the key regional and local stakeholders. Moreover, the regional government should support the local governments by creating awareness of the national and regional priorities, planning and provision of major infrastructure improvements, identifying and designating protected areas, conduct of environmental impact assessment and appraisal regionally significant plans and projects and provision of guidance and assistance to local authorities by establishing local planning instruments.

Finally at local level, spatial planning involves the preparation of local plans that are aligned with the national and regional policies and goals. As end users, local governments should prepare regulatory planning instruments, identify priorities for implementation, enhance the preparation of local spatial plans, set the framework for planning coordination with adjoining authorities, actively involve the community through participatory planning tools and monitor and evaluate the implementation of policies and proposals taking into account the relevant planning legislation.

The success of the implementation of effective spatial planning at different levels of government, however, depends upon the availability of planning laws, policies, guidance, procedures and incentives that have both long-term vision and short-term considerations and degree of ease of cooperation between different government agencies([Stead and Nadin, 2008]).

Ethiopia is experiencing notable demographic shifts, with a growing population and increasing urbanization rates. Over the past few decades, the country has experienced significant population growth and urbanization, primarily driven by rural-to-urban migration and natural population increase. As a result, Ethiopian cities and towns have witnessed rapid expansion, often characterized by informal settlements, inadequate infrastructure, urban sprawl, unemployment, poverty, housing shortages and a strain on essential services. This presents complex challenges in terms of land management, infrastructure development, and equitable access to resources and services. Similarly, Ethiopia's rural areas face their own set of challenges, including land degradation, limited access to basic services such as education and healthcare, and the need for sustainable agricultural practices.

These complex spatial dynamics require comprehensive spatial planning strategies that integrate the needs of urban and rural areas while considering the unique geographical, social, and economic characteristics of the country. It is envisaged that spatial planning will provide a framework for addressing these challenges both in rural and urban areas of the country by guiding development in a coordinated and sustainable manner, minimizing negative environmental impacts, and promoting social and economic well-being.

4.1 Spatial Planning: Definition and Scope

Spatial planning is concerned with “the problem of coordination or integration of the spatial dimension of sectoral policies through a territorially-based strategy” ([Alem, 2021]).

Spatial planning can be defined as a systematic and forward-thinking process aimed at organizing and regulating the use and development of land, resources, and infrastructure within a defined geographical area. It is concerned with overcoming the challenges of coordination and integration of the spatial dimension of sectoral policies through a territorially based strategy ([Nadin, 2006]).

There is no common definition of the concept ‘spatial planning’ that is universally accepted by all. Spatial planning is defined in number of ways. Here are some examples.

- ‘... the Compendium of European Spatial Planning defines spatial planning as methods used largely by the public sector to influence the future distribution of activities in space ([Nadin, 2006]). The Compendium states that spatial planning is undertaken with the aims of creating a more rational territorial organization of land uses and the linkages between them, to balance demands for development with the need to protect the environment and to achieve social and economic development objectives. It embraces measures to coordinate the spatial impacts of other sectoral policies to achieve a more even distribution of economic development between regions than would otherwise be created by market forces, and to regulate the conversion of land and property uses ([Faludi, 2004]).
- In the United Kingdom, the Government defines spatial planning as going beyond traditional land-use planning to integrate policies for the development and use of land with the other policies and programs that influence both the nature and function of places. This includes policies that can impact on land use but which are not capable of being delivered solely or mainly through the granting or refusal of planning permission and which may be implemented by other means ([Ross, 2005].
- In Slovenia, spatial planning is defined in the 2002 Spatial Planning Act as an interdisciplinary activity involving planning land use, determining the conditions for the development and location of activities, identifying measures for improving the existing physical structures and determining the conditions for the location and execution of planned physical structures ([Čok et al., 2024], and [Krajewska et al., 2014]).
- In Germany, Spatial planning at the federal and state levels comprises all comprehensive, supra-local and superordinate activities for structuring and developing space. It is “comprehensive” in the sense that it has the job of coordinating spatially significant sectoral planning. It is “supra-local” in that its scope is beyond that of the territorial and material, autonomous scope of the individual local authority. The comprehensive and supra-local nature of spatial planning gives it “superordinate” status in the German planning system. All public planning authorities have to comply with or take account of the requirements of spatial planning in any spatially significant planning and measures they undertake. Planning and measures are said to be “spatially significant” if they make use of land or influence the spatial development of an area. According to the Federal Spatial Planning Act and state spatial planning acts, the task of spatial planning is to guide and develop spatial structure in the pursuit of sustainable spatial development. In Germany, the essential purposes of spatial planning (Supra-sectoral planning) are elaborated and implemented by a range of tools on three levels: federal spatial planning (Bundesraumordnung), state spatial planning (Landesplanung) including regional planning (Regionalplanung); and urban land-use planning (Bauleitplanung). Taken together, these three planning tiers constitute a coherent spatial planning system in Germany ([Pahl-Weber and Henckel, 2008]).

Accordingly, spatial planning is a comprehensive and integrative approach to land management and development that goes beyond traditional land use planning. It involves the strategic organization and design of physical space to achieve sustainable human settlements, economic growth, and environmental protection.

Unlike conventional land use planning, which primarily focuses on zoning and regulatory controls, spatial planning takes a holistic perspective, considering the broader spatial context

and incorporating social, economic, and environmental dimensions into decision-making processes. The scope of spatial planning differs greatly from one country to another, but most share a number of similarities. In almost all countries, spatial planning is concerned with identifying long- or medium-term objectives and strategies for territories, dealing with land use and physical development as a distinct sector of government activity, and coordinating sectoral policies such as transport, agriculture and environment ([Koresawa and Konvitz, 2001]).

4.2 Key Components of Spatial Planning

Spatial planning comprises several interrelated components that contribute to its effectiveness. These include:

- Land use zoning by which spatial planning involves the allocation of different land uses, such as residential, commercial, industrial, agricultural, and recreational areas, to ensure efficient use of available land resources.
- Infrastructure development that includes the planning and provision of essential infrastructure systems, such as transportation networks, utilities, water supply, sanitation, and public amenities, to support economic activities and enhance quality of life.
- Environmental protection measures in which spatial planning incorporates strategies to protect and preserve natural resources, biodiversity, and ecologically sensitive areas, ensuring sustainable environmental management and minimizing negative impacts.
- Urban design principles in spatial planning encompass the application of design principles and guidelines to shape the physical form, layout, and aesthetics of urban spaces, promoting functionality, attractiveness, and human-scale development.
- Social inclusion strategies in spatial planning aims to address social inequalities and ensure equitable access to housing, education, healthcare, and public services, fostering inclusive communities that cater to the needs of diverse populations.
- Economic development policies in spatial planning involve the integration of economic considerations into spatial planning, fostering job creation, investment opportunities, and sustainable and balanced economic growth in different regions.

4.3 Principles of Spatial Planning

Spatial planning is guided by a number of principles. The principles can be perceived from the functional, legal and policy perspectives. Functionally, spatial planning follows the following principles:

- Spatial planning emphasizes the integration of social, economic, and environmental considerations having spatial implications. It recognizes the interconnectedness of these dimensions and seeks to optimize their interactions to achieve balanced and sustainable outcomes. By integrating land use planning with transportation, infrastructure, and environmental management, spatial planning aims to foster synergies, minimize conflicts, and promote more efficient resource utilization.

- Spatial planning adopts a long-term perspective, taking into account future needs, trends, and uncertainties. It anticipates the impacts and consequences of present-day decisions, considering the potential long-term implications for communities and the environment. By adopting a forward-looking approach, spatial planning helps to avoid short-sighted development patterns and encourages sustainable growth and resilience over time.
- Spatial planning recognizes the importance of engaging stakeholders throughout the planning process. It involves meaningful participation of communities, interest groups, government agencies, and other relevant entities. Stakeholder engagement facilitates the exchange of knowledge, fosters transparency, builds trust, and enhances the legitimacy and acceptance of spatial planning decisions. By involving diverse perspectives and local knowledge, spatial planning can generate more inclusive and locally appropriate solutions.
- Spatial planning requires coordination and collaboration among different levels of government, from national to regional and local. It acknowledges that effective planning outcomes depend on coherent and coordinated actions across jurisdictions and sectors. Multilevel governance mechanisms facilitate cooperation, coordination, and policy coherence, enabling the alignment of spatial planning objectives with broader development strategies and policies.
- Spatial planning recognizes the need for adaptive management approaches. It acknowledges the inherent complexity and uncertainty associated with planning processes and outcomes. Adaptive management allows for flexibility and responsiveness to changing circumstances, emerging knowledge, and evolving needs. It enables adjustments, revisions, and continuous learning, ensuring that spatial planning remains dynamic and adaptable over time.

On the other hand six key principles that define the scope and the framework of the law and policy of spatial planning are also recognized ([Stead and Nadin, 2008]).

- The democratic principle implies that good government corresponds to good planning. Spatial planning is a centrally important government function, directly affecting the lives of all people. It is therefore particularly important that planning decisions are made with legitimate authority by bodies that are accountable through democratic processes.
- The subsidiarity principle supports decision-making process that is to be driven by local requirements. However, the principle of subsidiarity acknowledges that it may be necessary for the decision to be made at higher levels because the scale of the issue or objective being pursued cannot properly be addressed at the local level, as in the case of major transportation infrastructure construction. Similarly, there could be net benefits accruing to lower levels because of decision made at higher levels, Therefore, it becomes necessary to waive some of the decision making power to higher levels in order to avoid incoherent spatial development strategy.
- The participation principle is founded on the fact that spatial planning decision will impact the community. Therefore, the spatial planning decision making process must ensure community participation through effective participatory procedures.
- The integration principle of spatial planning recognizes the need for sectoral and geographical integration. Spatial planning process will enhance policy coherence and common territorial development strategies that will promote integration between different levels of government, integration between sectors and integration across political boundaries. Adoption of this principle will provide mutual benefits to all.

- The proportionality principle promotes balance between commitment and flexibility in spatial development. Spatial development policy should be founded on solid commitments to achieve development goals and yet must be flexible enough as well to adapt itself to economic, social, technological trends and promote innovations.
- The precautionary principle of spatial planning implies that in case of any spatial development that will likely have potential negative impacts but the degree of damage cannot be precisely determined for the lack of information or uncertainty, then precautionary measures should be instituted for such development activities elsewhere so as to reduce such damages. A good example is the international recognition to reduce global warming in vulnerable areas, although its impact on climate change is not precisely known.

4.4 Strategic Objectives of Spatial Planning

The purpose of a spatial strategy is to provide an overview of the proposed pattern of spatial development of the territory and to add value by coordinating the territorial impacts of sectoral policies. The critical issue for spatial strategies is how to maximize sustainable development through encouraging and guiding the spatial distribution of development, redevelopment and investment; the coordination of infrastructure, e.g. the transport, water, housing, health and social services that support such development; and also the maintenance of environmental assets. Therefore, the spatial strategy should be comprehensive so as to incorporate all aspect of development and spatial so that it can be instrumental in coordinating territorial impact of spatial development. It is as well strategic as it attempts to specify the general location of development at the level of settlement or sub region without designating detailed boundaries ([Stead and Nadin, 2008]).

In many examples, spatial strategies are formulated by regional governments but in case of cross regional issues, as in metropolitan or big urban areas, local governments cooperate in the formulation of common spatial strategy. The formulation of the spatial strategies should not be impeded by administrative boundaries in those cases where functional relationship transcends their boundaries. Moreover, the spatial strategy can be used to facilitate sectors to consider the spatial dimension of their activities and and understand how their activities relate to the decisions made by other sectors.

It is recommended to give priorities for spatial strategies over sectoral policies in the process of approval of spatial strategies by national and/or regional government. Spatial strategies, which are collectively decided including the lower ties of government, enhance vertical policy integration by providing the framework for the formulation of regional and local spatial strategies that are aligned with the national spatial priorities ([Stead and Nadin, 2008]).

On the other hand, it is evident in many cases that strategic plans that are formulated usually ignore or give little attention to the geographical and territorial impacts of policies and activities by focusing only on the sector. However, spatial planning advocates and considers the interaction among the policy sectors according to different territorial units; national, regional and local, across a wide range of policy sectors dealing diverse problems of economic, social and environmental.

Spatial planning is primarily concerned with the coordination of sectoral policies across territorial units which will promote the achievements of the spatial objectives. Despite variations between countries, spatial planning systems in general have the following three fundamental functions ([Koresawa and Konvitz, 2001]).

- Spatial planning provides a long or medium-term strategy for territories in pursuit of

common objectives, incorporating different perspective of sectoral policies;

- Spatial planning deals with land use and physical development as a distinct sector of government activity alongside transport, agriculture, environment, etc., and
- Spatial planning can also mean the planning of sectoral policies according to different scales.

There has been a major shift in the objectives of spatial planning – a shift from the traditional agenda of promoting welfare state (in European context) and formulation of spatial development strategies through master plans and other development plans to more broad spatial development agenda. The shift has been promoted by the need to secure sustainable development, promote local endogenous development and adjust local economies to competition and the requirements globalization.

Accordingly, spatial planning is directed at achieving the following strategic objectives;

- Spatial planning attempts to reduce existing spatial or regional disparities within countries;
- Spatial planning is concerned with the achievement of sustainable development
- Spatial planning is a tool to coordinate various sectoral policies in pursuit of common spatial development strategies; and
- Spatial planning is a tool of spatial integration, coordination and interaction which enables sub-national government to shape their own spatial development policies in line with national or even international policy goals and as well facilitates regional and local governments to adapt national policies to regional and local contexts.

4.5 Systems of Spatial Planning

Spatial planning employs a number of instruments and tools, including laws, policy statements, guidance, procedures, incentives and sanctions. The important ones are discussed below ([Stead and Nadin, 2008]).

Spatial planning systems around the world have been reviewed in recent years, with a focus on increasing the importance of strategy, ensuring more effective collaboration, and allowing for more flexibility in development regulation. To achieve these goals, governments should enact laws that establish a simple set of priority spatial planning instruments and transparent procedures for their creation. Moreover, the importance of planning instruments including spatial strategies that are directed at coordinating activities of sectors and administrations over relatively large but coherent territories, directives, spatial framework setting out a minimum of policy statements and specific designations to guide development, redevelopment, and infrastructure coordination and policy statements ensuring consistent and efficient decision-making is to be emphasized. These mechanisms should be backed up with a system for the environmental appraisal of plans and projects, as well as firm and consistent enforcement of decisions.

Spatial planning employs a number of instruments and tools, including laws, policy statements, guidance, procedures, incentives and sanctions. The important ones are discussed below([Stead and Nadin, 2008]).

4.5.1 Planning Tools

All countries need a set of planning tools that enable effective and fair management of spatial development. However, previous approaches to planning have been too detailed and prescriptive, using a top-down approach that assumes too much control over private action. This has led to rigid plans that are difficult to prepare and keep up to date, and that inhibit planning authorities from responding to opportunities. The key is to find a balance between commitment and flexibility, knowing which needs must be addressed immediately and which needs can be met over a longer timeline.

Planning tools should work together in a complementary and consistent way to ensure a proactive and coordinated approach to managing development, as well as fairness, accountability, and transparency in the decision-making process. It is also important that planning tools are considered corporate documents owned by all sectors of government, rather than as an external imposition. This means that they should be prepared in an open and collaborative way([Stead and Nadin, 2008]).

4.5.2 Legal Framework

Many countries have reformed their planning laws in recent years to enable significant changes to their planning systems. This is because planning laws in some countries have not kept pace with the reality of spatial development and the pressures on the system. Planning laws are being reformed to make planning systems more effective, flexible, and responsive to the needs of communities and the environment. Planning laws are also being reformed to give local communities and other stakeholders more say in the planning process.

One of the key goals of planning law reform is to shift the focus of planning from physical land use regulation to an "integrative spatial planning approach." This shift results in:

- More effective coordination of sectoral actions that have a cross-sectoral spatial dimension;
- More flexibility in the planning process;
- Greater responsibility for operating the system for authorities at the regional and local levels while ensuring conformity and adequate supervision;
- More effective participation by local communities and other stakeholders;
- The ability of planning authorities to recoup a proportion of the financial gain from the allocation of development rights to private developers to pay for externality effects and provide local community benefits; and
- Giving due consideration of environmental impacts of development so that adverse impacts are mitigated and/or compensated([Stead and Nadin, 2008]).

4.5.3 Decision-making process

Generally, in an open, democratic, and mixed market society, national and regional governments should devolve decision-making to local stakeholders and investors whenever possible. However, there are some critical issues that need to be decided in a top-down manner, such as:

- Protecting critical natural capital

- Taking up major inward investment opportunities
- Protecting heritage assets from speculative activities
- Facilitating decisions on major energy infrastructure
- Imposing common development land taxes

National and regional decisions of major importance need to be binding on all levels and with all actors, and to follow a process that ensures accountability. These decisions should respect agreed policy statements wherever possible and be accompanied by clear explanations when they do not. All levels of government should be offered an opportunity to play a part in the decision-making process. Law and policy need to explain the criteria by which authorities at the national level may intervene in regional and local decisions. Generally, central intervention in decisions normally made at lower levels should be limited to matters of national and international significance or issues of potential national controversy ([Stead and Nadin, 2008]).

4.5.4 Policy Statements

National and regional policy statements play a critical role in effective integration of actions among levels of government and between sectors. These statements should include a clear set of general goals and principles for spatial planning, as well as targets and indicators. Countries should produce national spatial development plans or perspectives that communicate and elaborate upon national planning policies.

The preparation of “national spatial development report’ will facilitate the preparation of such framework. However, the preparation of national policy framework is contingent upon a high degree of capacity, an in-depth understanding of the spatial development trends and their implications as well as high degree of political consensus. This should be based on a “bottom-up” as well as “top-down” approach to policy development. Policy statements should be generally binding on all levels, but allow for some discretion where there is good reason.

The form of expressing national goals and policies for spatial development requires careful consideration. Laws may be used to make policy statements, but this may be unwieldy and difficult to adapt or update. A more flexible and transparent approach is ideal. There will be a need for a variety of forms of policy statements at national, regional, and local levels. Some will have little flexibility, while others may offer more discretion to decision makers. Where local governments and planning systems are not well established, it is better to have clear and unambiguous statements that allow for less discretion. National spatial development policy statements should be seen to apply to all parts of government and all those with a specific role in managing spatial development. These statements are not just directives for the spatial planning system. They are an important mechanism for integrating the disparate actions of government departments, the private sector, and communities. They should be used as a basis for formulating proposals as well as for deciding on them ([Stead and Nadin, 2008]).

4.5.5 Spatial Strategies

Spatial strategy is a document that provides an overview of the proposed pattern of spatial development of a territory and incorporates the territorial impacts of sectoral policies. It aims to maximize sustainable development by encouraging and guiding the spatial distribution of development, redevelopment, and investment, and coordinating infrastructure. The process

of formulating the spatial strategy should be based on the examination of alternative spatial development options that are subject to consultation and screened through the strategic environmental assessment.

Spatial strategies enhance vertical policy integration and help to coordinate spatial development across different levels of government. They do this by interpreting national spatial priorities for a given territory and enabling lower-level administrations to cooperate on policy formulation. Spatial strategies also provide guidance for local policy frameworks and for public and private investment. They give a sense of direction and priorities, but leave discretion for decisions to be made at the local level when appropriate.

Spatial strategies are prepared for regions, which can be administrative or functional. The formulation of spatial strategies is usually within the competence of regional government, but there are examples where local governments voluntarily cooperate on the formulation of a spatial strategy for the whole functional region whose boundary crosses the existing administrative boundaries, as in the case of metropolitan region.

The collective participation of stakeholders in government, civic society, and business is crucial to the success of spatial planning. The spatial strategy can be used to encourage other sectors to address the spatial dimension of their activities and understand how their activities relate to decisions in other sectors. Engaging sectoral interests in the spatial planning process can be a challenge. National and regional governments can support the process by linking elements of sectoral funding to the spatial strategy. Some incentive will also come from the binding nature of the strategy on local-level policy frameworks, proposals, and regulation.

Finally, the spatial strategy should be comprehensive in its ability to consider all important aspects of development. It should be "spatial" in the sense that its primary role and value is in coordinating the territorial impacts of spatial development, and "strategic" in the sense that it identifies the general location of development at the level of the settlement or sub region, but does not designate detailed boundaries.

4.5.6 Spatial Framework Plans

The spatial framework plans provides general guidance on planning proposal and supporting policy statements. The framework plan is made for area of local government or clusters of local governments together with their functional areas including the adjoining rural areas. The spatial framework plans are intended to guide and coordinate proposals for development and provide a general reference for land use regulations ([Shlomo et al., 2012]).

The framework plan should be a corporate statement of policy from the planning authorities involved, in partnership with other key delivery agencies. It should coordinate the spatial aspects of their sectoral policies in the areas of economic development, transport, environmental protection, health, education or agriculture. The framework plan should be closely interrelated with public investment programs, should highlight the spatial dimension of sectoral policy, and should show where policy fits together and where it does not.

Ensuring collaboration in the development of a spatial framework plan among local authorities is important though usually challenging. This is a critical requirement if effective planning is to be achieved and the costs of non-coordination and fragmented development which arises from competition between local authorities and agencies is to be either minimized or avoided. National governments should play a key role in encouraging sectoral interests and administration to cooperate, so that the plan has a high-priority status for government ([Shlomo et al., 2012]).

Where local government units are small, national or regional governments may have to prescribe

the areas for which framework plans are to be prepared – this is especially important for ensuring coordinated development of urban areas that are contiguous with surrounding rural areas. Governments may also need to offer incentives or apply sanctions in order to encourage effective cooperation on planning. Government funding, grants and support for infrastructure should be tied to the creation of joint inter-authority planning frameworks ([Stead and Nadin, 2008]).

The plan must be binding for regulation and development management, but the degree of prescription will be dependent upon local circumstances. In general, the framework plan must adopt a minimalist approach concentrating on priorities, key challenges and places where change is anticipated and should reflect the dynamics of spatial development, highlighting trends and uncertainties. In some countries, framework plans are detailed with specific allocations for each parcel of land. As in traditional master planning approach, this type of approach has been shown generally to be inflexible and difficult to keep up to date. It tends not to reflect the realities of great uncertainty in spatial development and public investment, although detailed and binding specification will be needed where there is some certainty of delivery. Elsewhere, criteria-based policies that set out objectives for particular types or general locations of development have been shown to be a very effective way to manage change at this level.

The framework plan will be a mix of detailed and binding proposals with general policies and proposals. It should also be closely interrelated with other methods of shaping spatial development such as incentives or subsidies. The framework plan should be formulated through a participatory process which allows stakeholders to express their views on draft proposals, to recommend alternatives and, where necessary, to make formal objections to the preferred option of the planning authority. Finally, the plan should demonstrate conformity with national and regional policies, although in most cases, it will be necessary for the framework plan to be approved by a higher authority ([Shlomo et al., 2012]).

4.5.7 Land-use Regulations and Development Management

Most development decisions should be made at the local level, based on criteria set out in policy documents adopted by the local authority after consultation with higher levels of government. All development proposals above certain parameters must be authorized by the local authority, and each sectoral interest must be consulted about particular decisions. However, local decisions should be strongly directed by agreements reached among sectoral interests at regional and framework levels. For proposals that are not identified in strategies and plans, the general framework provisions and criteria will apply. In other words, the system should encourage local decision-making, but within a framework of regional and national agreements. This ensures that local decisions are made in a way that is consistent with broader goals and objectives.

Development management decisions should be made by elected bodies at the appropriate level, and the decision-making process should be transparent, impartial, and fair. This means that the planning authority should make documentation widely available and open its meetings to the public. In some cases, where the local political system is not firmly established, a separate committee made up of representatives from the civic, community, and business sectors may be appropriate for decision-making. Routine decisions may be delegated to officers, but any decisions that involve third parties should be finalized by the main decision-making body. In other words, the decision-making process for development management should be open and accountable, with all stakeholders having a voice. Planning law should identify which types of development require national or regional government approval, based on the principle of subsidiarity. Most decisions should be made at the local level, with national government setting overarching policy and regional government providing guidance. If higher levels of government

intervene, they should consult with local authorities and other stakeholders. Zoning by-laws are a common approach to land-use planning in Europe. They are detailed regulations that allocate development rights and are checked against development proposals before permits are issued. This approach requires a lot of planning capacity and can be difficult to keep up to date. Zoning by-laws can be rigid and inflexible, but they can also be valuable for protecting environmental assets. However, their inflexibility has led to some plans falling out of date and being bypassed by informal agreements or unauthorized development. Zoning by-laws are a powerful tool for land-use planning, but they also have some drawbacks. It is important to strike a balance between ensuring that development is regulated in a way that protects the public interest and allowing for flexibility to meet the needs of changing communities.

Traditional zoning by-laws work well when the public sector is the main developer and development patterns can be predicted with certainty. However, they are not well-suited to market-led development processes, where there is great uncertainty and a variety of development proposals from different sources. To address this, some countries are implementing new zoning procedures that offer more flexibility in interpreting zoning plans and evaluating development proposals. This does not necessarily reduce the effectiveness of zoning plans, but it does change their nature. Instead of trying to predict development in advance, zoning plans can be more responsive to unexpected but positive development proposals. Zoning by-laws are still a valuable tool for land-use planning, but they need to be adapted to meet the challenges of contemporary spatial development processes.

In addition to zoning by-laws, other tools can be used to make land-use regulation more simple and effective. These include national codes on energy efficiency and building design, as well as less prescriptive guidance on development. National codes can be an effective way to improve the quality of development across large territories, especially where local governments lack capacity. They can also be welcomed by the private sector, which values working towards common standards. Less prescriptive guidance can be used to ensure good coordination between transport, land use, health, and education. This can help to create more sustainable and livable communities. Overall, these tools can make land-use regulation more effective and efficient, while still ensuring that development meets important public policy goals.

Investors often have to deal with multiple regulatory bodies when developing a project. Some countries have combined regulatory bodies, but this can be complicated and difficult to implement. A "one-stop shop" approach, where investors can deal with all regulators through a single point of contact, is often more effective. Regulatory bodies should work together in a complementary and consistent way. Developers need a clear understanding of the permitting process and what is required at each stage. Regulatory bodies should coordinate their efforts to ensure that they are all working towards common objectives. This coordination can be facilitated by involving regulatory bodies in the preparation of strategic and framework plans, and by linking incentives such as regional and urban policy funding to the provisions of the framework plan ([Stead and Nadin, 2008]).

4.6 Spatial Planning and Levels of Government

The major functions of spatial planning, in respect to administration and decision making, are performed at the different levels of government: national, regional and local each with its own specific focus and jurisdiction. Generally, at a national level, national spatial planning frames spatial development at national level, guides planning functions and activities at lower levels of government. Moreover, as a policy tool of national –regional planning, it seeks to distribute economic activities social welfare fairly between regions. At a regional level, spatial planning

shapes regional development. At local or municipal level, spatial planning is mainly concerned with land use planning regulating land and uses of properties. Generally, these two dimensions of spatial planning; namely functional and administrative are used to make a comparative analysis of the scope of spatial planning between countries ([Koresawa and Konvitz, 2001]).

It should be emphasized here that the allocation of competencies and responsibilities among the different levels of governments is dedicated by the principle of subsidiarity in which decisions should be made in as much as possible at the lowest tier of government. However, in many instances this could not be achieved because of lack of capacity of those levels to achieve the desired spatial planning outcomes ([Stead and Nadin, 2008]).

4.6.1 National Level

National governments, based on the constitution and other relevant laws, formulate a national spatial framework of planning tools and procedures which determines the competencies to be exercised and by which actors in the government are those competencies to be exercised. At the national level, governments formulate strategic frameworks, policies, and legislation that guide spatial development across the entire country. National-level planning provides a broad vision and direction for spatial development and ensures coordination among regions.

Some of the key roles of national governments in spatial planning, which could be modified to fit local context of countries, include:

- Promoting a shared strategic vision and establishing priority outcomes for spatial development through unambiguous policy statements, and the positive role that spatial planning plays in achieving those outcomes;
- Developing a legislative framework that enables the creation of spatial planning instruments and policy at different spatial scales through democratic and participatory procedures;
- Utilizing incentives and sanctions to ensure effective cooperation across sectors and administrative boundaries as well as between levels of government;
- Supervising spatial planning at the regional and local levels to ensure adherence to laws and probity in procedures; promoting conformity of policies and actions among jurisdictions;
- Monitoring spatial development trends and the impact of spatial planning, and making use of indicators and targets;
- Taking the lead in providing the necessary evidence base of data and information on the state of the spatial development and the impact of spatial planning;
- Ensuring that other national ministries and departments understand the effects of their policies and actions on spatial development and the need for coordinated policy and action among all departments when delivering priority spatial outcomes;
- Supporting and advising regional and local governments and helping to build capacity at all levels, both in terms of professional expertise and political leadership;
- Providing an appeals procedure whereby citizens and businesses can object to local and regional decisions, through arbitration, mediation and, if necessary, making binding decisions on unresolved local cases;

- Managing and directly regulating issues of national and international significance in collaboration with regions and local authorities, for example in relation to the designation of sites of national significance that should be protected from development
- Creating “national agencies” to act as liaisons when working in partnership with regional and local governments on matters needing urgent and special attention, such as major reconstruction zones ([Stead and Nadin, 2008]).

4.6.2 State or Regional Level

State or regional planning involves the translation of national policies and frameworks into regional development plans. It takes into account regional qualities, priorities, and resources while aligning with national goals. Regional planning ensures spatial coherence and balance within each region. Specifically, the main tasks at the regional level are to interpret and adapt national policies and priorities to regional conditions, to provide a strategic plan which addresses the functional planning relationships and overall development patterns, and to provide guidance and assistance to local authorities in the creation of local planning instruments. State or regional government should use spatial planning as a tool to ensure a measure of coherence and integration among a number of strategies, including economic development, environmental resources, sustainable development, rural development, heritage, and culture and tourism that are undertaken in the state or region. This will normally be done through an integrated strategy that provides an analysis of the territorial impacts of all government policy and encourages action promoting the complementarity of measures.

Some important roles of state/regional government in spatial planning include:

- Preparing spatial strategies using 15- to 20-year projections for the overall development of the state/region by collaborating with regional and local stakeholders;
- Designating and protecting areas of critical natural capital such as recreational areas, water resources and mineral resources;
- Planning and delivery of regionally significant infrastructure that crosses local authority boundaries;
- Using appropriate environmental assessment and appraisal methodologies for regionally significant plans and projects;
- Supervising local spatial planning to ensure conformity with national and regional strategies, and to ensure that decision-making procedures are followed;
- Ensuring that local authorities collaborate in their planning so that critical cross-cutting issues are addressed (particularly on the urban-rural fringe) and the sensible planning of functional planning areas is achieved;
- Monitoring and providing information and analysis on regional spatial development trends for national and local governments;
- Assisting in capacity-building at the local level through guidance, training, and interpretation of legislation;
- Providing a means of appeal on contested matters and mediating disputes between local authorities ([Stead and Nadin, 2008]).

4.6.3 Local Level

Local-level planning focuses on implementing spatial plans and regulations within municipalities, cities, or local communities. The implementation and planning decisions at local levels should be made with reference to policies established at national and regional levels and implemented using detailed plans prepared and adopted at the local level.

Local spatial planning instruments will usually be in the form of frameworks and regulatory plans. This involves the development of local development plans, zoning regulations, and land use guidelines tailored to the specific needs and characteristics of the local area. It is very important that local government should work in partnership with regional government to ensure conformity of local policies and decisions with regional strategies.

The role of local government in spatial planning will thus include:

- Establishing the priorities for action on spatial development for the local area in partnership with local stakeholders and regional bodies;
- Preparing a simple planning framework that identifies the main geographical areas of change, the priority desired outcomes and planning policies, and also explaining the contribution that will be made by different departments and sectors to realizing the desired outcomes;
- Preparing regulatory planning instruments setting out decision rules for the locality (these tasks will often be done in collaboration with other authorities across larger territories);
- Engaging with the community on the preparation of planning policies and proposals and ensuring that local concerns are voiced in regional arenas;
- Taking proactive measures to encourage development that is in accordance with the agreed planning framework, for example in making effective use of land in public ownership;
- Creating project partnerships across the public, private and community sectors to deliver specific proposals;
- Rigorously enforcing strict adherence to planning procedures and dealing promptly with unauthorized developments; and
- Monitoring the implementation of policies and proposals, decision-making and spatial development trends affecting the locality.

It is recommended the national governments should apply the principle of subsidiarity in the allocation of competences and make efforts to build the capacity of lower levels to take on spatial planning tasks. National governments (including states in federal systems) must create the conditions for effective spatial planning at the regional and local levels, including enacting framework legislation that provides an outline of planning tools and procedures. The regional level will take the lead in the preparation of spatial strategies in order to coordinate the impacts of sectoral policies. Local governments should have primary responsibility for managing and regulating development within the policy framework, though this may require that groups of authorities work collaboratively to cover functional areas and build capacity ([Stead and Nadin, 2008]).

4.7 Types of Spatial Planning and Approaches

Spatial planning can be categorized into different types and approaches, each tailored to address specific spatial challenges and objectives:

- Strategic spatial planning focuses on long-term visioning and policy development at regional or national levels. It involves setting broad goals, formulating strategies, and establishing policy frameworks to guide spatial development and land use decisions.
- Regional or sub-regional spatial planning narrows down the focus to a specific region or sub-region within a larger jurisdiction. It aims to address regional disparities, promote balanced development, and ensure coordinated spatial development within the designated area.
- Urban or metropolitan spatial planning is concerned with the planning and management of urban areas or metropolitan regions. It aims to create sustainable, livable, and well-functioning urban environments by addressing issues such as urban sprawl, transportation infrastructure, housing, and public space design.

4.8 Key stakeholders of Spatial Planning

Spatial planning requires the collaboration and active engagement of various stakeholders to ensure its effectiveness and social inclusiveness. Identifying and engaging the whole range of stakeholders is crucial. Stakeholders can include those directly involved in the decision making process, such as local authorities (politicians and civil servants) and other tiers of government, the development industry and investors, as well as others who can productively contribute to the decision-making process such as community representatives and NGO's.

Key stakeholders involved in spatial planning are:

- Government agencies: National, regional, and local government entities responsible for policy formulation, planning, and regulatory functions play a crucial role in spatial planning.
- Urban and regional planning departments: Planning departments within governmental institutions are responsible for coordinating and implementing spatial planning initiatives, including plan formulation, implementation, and monitoring.
- Environmental organizations: Non-governmental organizations (NGO's) and environmental advocacy groups contribute to spatial planning by providing expertise on environmental conservation, sustainable development, and climate change, resiliency and biodiversity protection.
- Community organizations: Local community groups, neighborhood associations, and civil society organizations play a vital role in providing input, representing community interests, and fostering participatory decision-making processes in spatial planning
- Private sector: Developers, landowners, businesses, and industry associations have a stake in spatial planning as it influences investment opportunities, land use regulations, and infrastructure development.

- Academia and research institutions: Academic institutions and research organizations provide valuable research, expertise, and technical support in spatial planning, contributing to evidence-based decision-making and innovative planning practices.

By involving these key stakeholders in the spatial planning process, a more inclusive, comprehensive, and sustainable approach can be achieved. Engaging stakeholders provides a way of exchanging knowledge and information to improve the spatial planning process. It can also help create consensus between stakeholders and increase the general support for policies.

4.9 Spatial planning process

The spatial planning process, in line with other planning process, follows a systematic and iterative approach, comprising several interconnected steps:

- Data collection and analysis: The planning process begins with the collection and analysis of data to understand the physical, social, and economic characteristics of the planning area. This includes gathering information on land cover, topography, demographic trends, economic activities, infrastructure networks, and environmental features. Data analysis techniques, such as Geographic Information Systems (GIS), remote sensing, and statistical modeling, help to generate insights and inform planning decisions. Such information enables planners to understand the existing conditions, trends, and challenges within the study area.
- Stakeholder consultation: Planners engage with various stakeholders, including government agencies, local communities, businesses, NGO's, and experts, to gather input, incorporate diverse perspectives, and ensure the inclusiveness of the planning process. Stakeholder engagement is a fundamental aspect of spatial planning. It involves consultations, workshops, public hearings, and other participatory mechanisms that provide opportunities for stakeholders to contribute their perspectives, aspirations, and concerns. Engaging stakeholders fosters a sense of ownership, builds consensus, and ensures that planning outcomes are informed by local knowledge and priorities.
- Goal setting (policy formulation): Based on the analysis of data and stakeholders input, spatial planning involves the formulation of goals, objectives, policies, strategies, and spatial plans that guide development within the planning area. This includes defining land use categories, establishing development priorities, identifying growth areas, and setting goals and objectives for sustainable development. Policy formulation requires the integration of social, economic, and environmental considerations and often involves iterative processes of consultation, evaluation, and refinement.
- Plan formulation: Planners develop spatial plans that outline the desired land use patterns, infrastructure networks, environmental protection measures, and design guidelines. These plans serve as blueprints for future development.
- Plan evaluation: The formulated plans undergo rigorous evaluation to assess their feasibility, effectiveness, and compatibility with the identified policies goals and objectives. Planners consider technical, environmental, social, and economic factors, and make necessary adjustments and refinements to the plans.
- Plan implementation: This step involves the implementation of the spatial plans through regulatory and non-regulatory means. Regulatory mechanisms include the establishment

of zoning regulations, land use controls, and development guidelines to guide land use decisions and development activities. Non-regulatory measures may include incentive programs, public investments, and infrastructure development that align with the spatial plans. Implementation requires coordination among various government agencies, private sector entities, and community organizations.

- **Monitoring and Evaluation:** Spatial planning involves monitoring and evaluating the effectiveness of implemented policies and spatial plans. This includes assessing the extent to which desired outcomes are achieved, evaluating the impacts of development activities, and identifying necessary adjustments and improvements. Monitoring and evaluation provide feedback to inform future planning processes and ensure that spatial planning remains adaptive and responsive

4.10 Instruments and methods of Spatial Planning

4.10.1 Instruments of Spatial Planning

Spatial planning employs various instruments and tools to facilitate effective plan implementation and management. These instruments include:

- Comprehensive land use plans provide a framework for guiding development and land use decisions within a specific area. They outline the desired land use patterns, development guidelines, and zoning regulations
- Zoning regulations divide the study area into different zones with specific land use categories and corresponding development regulations. They ensure compatibility, control building densities, and protect the environment and community interests.
- Development guidelines provide design principles, standards, and specifications for new developments, such as building heights, setbacks, architectural styles, open space requirements, and environmental considerations. They promote aesthetic and functional coherence in urban and rural areas.
- Environmental impact assessments (EIA's) evaluate the potential environmental impacts of proposed development projects. They identify and assess the potential adverse effects on natural resources, ecosystems, and local communities, and propose mitigation measures to minimize negative impacts.
- Infrastructure development plans focus on the provision of essential infrastructure, such as transportation networks, water supply systems, sanitation facilities, and energy networks. They guide the efficient allocation of resources and infrastructure investments in line with development objectives.
- Urban design frameworks provide guidelines and principles for creating well-designed and visually appealing urban spaces. They emphasize connectivity, walk ability, public space design, and architectural aesthetics to create vibrant and sustainable urban environments.

4.10.2 Methods of Spatial Planning

Spatial planning employs various methods to support decision-making, analysis, and community engagement. These methods include:

- Geographic Information Systems (GIS) technology is a powerful tool that enables planners to collect, analyze, and visualize spatial data, including land use patterns, population distribution, transportation networks, and environmental features. By employing spatial analysis techniques such as overlay analysis, proximity analysis, and spatial statistics, GIS helps identify spatial relationships and patterns while evaluating the suitability of various locations for specific uses. This comprehensive approach not only aids in assessing impacts but also supports evidence-based decision-making, making it essential for conducting spatial analysis, modeling scenarios, and ultimately guiding informed decisions in spatial planning ([Batty, 2013],[Longley et al., 2015]).
- Remote sensing techniques, including satellite imagery and aerial photography, provide valuable data for land cover classification, change detection, and monitoring of environmental conditions. Remote sensing supports spatial analysis and facilitates informed decision-making in spatial planning.
- Spatial modeling involves the use of mathematical and computational models to simulate and forecast the impacts of different planning scenarios on spatial patterns and processes. This approach allows planners to assess potential outcomes of various development options, facilitating informed decision-making and policy formulation based on a clear understanding of the effects of alternative strategies ([Wegener and Fürst, 2004], [Klosterman, 1999]).
- Scenario planning: Scenario planning involves the development and analysis of different future scenarios based on varying assumptions and conditions. It helps planners understand the potential implications of different development paths and identify strategies to achieve desired outcomes.
- Participatory planning involves engaging stakeholders and the community in the planning process to ensure that decisions reflect public interests and needs. This approach emphasizes transparency, inclusiveness, and collaboration ([Innes and Booher, 2004], [Arnstein, 1969]).
- Integrative Approaches: Integrative approaches combine multiple methods and techniques to create comprehensive planning solutions that consider economic, social, and environmental factors. These approaches aim to achieve balanced and sustainable development by integrating land use, transportation, housing, and environmental policies (Allemendinger and Haughton, 2012, Healey, 2007).

5 Land Use Planning

Land use planning is a critical process that involves the systematic assessment and regulation of land to achieve sustainable development goals. This multidimensional approach addresses various factors and issues, including the negotiation of land use among stakeholders, conflict resolution, and the integration of ecological, social, and economic considerations in land use decision making process.

Effective land use planning methods aim to balance competing interests, ensuring that land resources are utilized efficiently while safeguarding environmental integrity. Key steps in this process typically include establishing clear objectives, analyzing current land conditions, engaging stakeholders in decision-making, and continuously monitoring and revising plans to adapt to changing circumstances. As land use planning evolves, it increasingly incorporates participatory approaches that empower local communities and facilitate consensus-building, thus enhancing the resilience and sustainability of land management practices across diverse context.

5.1 Definition and process

Land use planning focuses on the specific allocation and regulation of land for different uses and activities by relevant authorities from up from national through regional down to local levels. Land-use planning is the process of deciding how land should be used in the future. It is concerned with the location, intensity, form, amount, and harmonization of land development for different purposes, such as housing, industry, recreation, transportation, education, nature, agriculture, and cultural activities. Land-use plans are proposals for how land should be used, based on a government policy. It is a conscious decision about how land should be used in the future. It is important to consider all of the different needs of society when making these decisions, and to ensure that development is done in a way that is compatible with the environment and sustainable for future generations ([Albrechts, 2004]).

The following definition of land use planning by FAO and UNEP as quoted by GIZ ([Wehrmann, 2012]) has been widely accepted. It states that “Land use planning is a systematic and iterative procedure carried out in order to create an enabling environment for sustainable development of land resources which meets people’s needs and demands. It assesses the physical, socio-economic, institutional and legal potentials and constraints with respect to an optimal and sustainable use of land resources, and empowers people to make decisions about how to allocate those resources”.

It involves determining the most appropriate uses for specific parcels of land, considering factors such as zoning regulations, development suitability, and community needs. Land use planning aims to balance competing land use demands, promote efficient use of land resources, and ensure compatibility between different land uses. It aspires to achieve environmental conservation, containment of urban sprawl, minimization of transport costs, prevention of land use conflicts, and a reduction in exposure to pollutants.

Land use planning, therefore, ensures that land as a resource is used in a sustainable and equitable manner. More specifically, land use planning can accrue a number of benefits:

- It can help to protect the environment by preventing the development of land in sensitive areas.
- It can help to reduce urban sprawl by encouraging the development of compact, walkable communities.

- It can help to improve the efficiency of transportation systems by reducing the need for long commutes.
- It can help to promote social equity by ensuring that everyone has access to affordable housing and other essential services.

5.2 Steps and Processes in Land use planning

Land use planning is a structured process aimed at achieving sustainable and effective management of land resources. It involves several key steps and elements that ensure comprehensive stakeholder engagement, informed decision-making, and alignment with legal frameworks. The steps and processes involved in land use planning (Berke and Godschlak, 2006, Plat, 2004; US, 2025) include.

- Establishing the goals and objectives of the plan is the first step in land use planning. This includes specifying social, environmental, and economic goals that the plan aims to achieve, as well as identifying the specific land areas involved and the needs of stakeholders.
- Data collection and analysis of data about the land is essential. This includes information on physical characteristics, current land use, and community needs. Following data collection, an analysis is conducted to assess the environmental, social, and economic impacts of various land use options. Engaging with stakeholders during this phase helps identify challenges and constraints.
- Identify opportunities for change by which on the basis of analysis, planners explore potential land use types that align with established goals. Public input is gathered to ensure that proposed changes reflect community interests and aspirations.
- Evaluate land suitability through which proposed land uses are matched with physical land characteristics to determine their suitability for different types of development. This evaluation helps in understanding which options are feasible given the existing conditions.
- Appraise alternatives in which a comprehensive appraisal of various land use alternatives is conducted, analyzing their environmental, economic, and social impacts. This step involves listing both favorable and unfavorable consequences to facilitate informed discussions.
- Choose the option through facilitated discussions among stakeholders. This will result to the selection of the most viable land use alternatives based on previous analyses and public feedback. This collaborative approach ensures that decisions are well-rounded and considerate of diverse perspectives.
- Develop the land use plan which involves creating a detailed land-use plan that outlines policy guidelines, budget considerations, and recommendations for implementation. This plan serves as a road map for future land use decisions.
- Implement the plan. Once developed, the approved land-use strategies are put into action, often in collaboration with relevant agencies and stakeholders. Effective implementation requires coordination among various parties to ensure alignment with the established goals.

- **Monitor and Evaluate.** Continuous monitoring of the plan’s implementation is crucial for assessing progress toward goals. Evaluation processes help determine the effectiveness of the plan in meeting its objectives, allowing for adjustments based on outcomes and new information.
- **Ensure Public Participation:** Throughout all stages of the planning process, public participation is vital to ensure that the plan reflects the needs and concerns of all affected individuals. Engaging stakeholders fosters transparency and builds community trust.
- **Adhere to Legal Frameworks:** Finally, it is essential that all planning activities are conducted within existing legal and regulatory frameworks to ensure consistency with national, state, and local laws.

5.3 Types of land use planning

There are many different types of land use planning, but some of the most common include:

- **Integrated Land Use Planning** considers different uses and demands from various sectors (agricultural, industrial, etc.) to allocate resources effectively while minimizing conflicts.
- **Participatory Land Use Planning (PLUP)** is crucial for managing communal or common property land by engaging local communities in the planning process.
- **Regional Land Use Planning** considers cumulative impacts of development on natural capital across larger geographical areas.
- **Rural Territorial Land Use Planning** focuses on planning and managing land use in rural areas, considering agricultural activities, natural resource conservation, and rural development.
- **Spatial Land Use Planning** emphasizes the spatial dimension of strategic policies, integrating and coordinating space-consuming activities within a specific geographic territory.
- **Environmental Land Use Planning** integrates environmental considerations into the planning process to minimize negative impacts and promote sustainability.
- **Ecological Land Use Planning** focuses on ecological aspects, considering factors like biodiversity and ecosystem services to guide sustainable land management practices.
- **Strategic planning** involves long-term planning to achieve specific goals and objectives. This method focuses on setting a vision for the future development of an area and developing strategies to achieve that vision. Strategic planning often includes stakeholder participation and considers economic, social, and environmental factors ([Albrechts, 2004], [Bryson, 2018]).
- **Comprehensive planning** takes a holistic approach to land use and guide land use decisions across an entire jurisdiction. It integrates various aspects such as transportation, housing, infrastructure, and environmental considerations to create a cohesive and sustainable land use strategy.
- **Sectoral Land Use Planning** focuses on specific sectors or industries, such as agriculture, tourism, or industrial development. It aims to optimize land use within each sector by identifying suitable locations, defining guidelines and regulations, and promoting sector-specific development objectives.

- Development Control and Site-Specific Planning in which while development control is a regulatory process that governs individual development proposals, ensuring compliance with land use regulations, building codes, and design standards, site-specific planning, on the other hand, involves detailed planning for specific sites or projects, considering site-specific characteristics, environmental impact, and design requirements.
- Zoning is a fundamental land use planning method that involves dividing land into designated zones with specific regulations governing the types of activities that can occur within each zone. This method helps prevent conflicts between incompatible land uses, such as separating residential areas from industrial zones. Zoning regulations can include guidelines for building heights, densities, setbacks, and land uses ([Nadin, 2006], [Fischel, 2004]).
- Master planning is used to develop a detailed plan for a specific area. It typically includes information about the area's infrastructure, transportation, and other amenities.
- Planning for special areas is used to develop plans for specific areas, such as parks, historic districts, or waterfront areas.

Land use planning encompasses several types and approaches, each with its own characteristics and objectives. The specific type of land use planning that is used will vary depending on the specific needs of the area. For example, if an area is facing rapid growth, strategic planning may be used to develop a long-term plan for the area's development. If an area is experiencing environmental challenges, comprehensive planning may be used to develop a plan that addresses those challenges. And if an area is home to a specific type of development, such as a park or a historic district, master planning may be used to develop a detailed plan for that area. Similarly, urban land use planning is the process of regulating the use of land in urban areas ([Filippova and Buchoud, 2020]).

5.4 Approaches to land use planning

There are many different approaches to land use planning, but some of the most common include:

- Top-down planning which is characterized by a strong central government that sets the goals and objectives of the plan, and then devolves responsibility for implementation to lower levels of government or to private sector actors.
- Bottom-up planning approach involving a more decentralized approach to planning, with local communities playing a leading role in setting the goals and objectives of the plan, and in implementing it.
- Integrated planning approach takes a holistic view of land use, and considers the interaction of different land uses, as well as the relationship between land use and other factors, such as transportation, infrastructure, and the environment.
- Sustainable planning approach seeks to develop land in a way that is environmentally, socially, and economically sustainable.
- Innovative planning approach uses new and innovative approaches to land use planning, such as the use of technology, the involvement of the public, and the use of market-based instruments.

5.5 Determinants of Urban Land Use Pattern

The determinants of the urban land use pattern are the forces that shape the spatial distribution of various land uses within an urban area, such as residential, industrial, commercial, institutional, and recreational uses. These patterns reflect the general functions of all cities: production, distribution, consumption, and amenity service. The major determinants can be summarized as economic, social, and physical factors, as well as the public interest ([Bauer, 2009]).

The concept of economic determinants is based on the idea that land will be used for the purpose that obtains the highest return, with competition among bidders in the urban land market determining the pattern of land use. The economic base and structure of an area determines its total size and the intensity of bidding for sites. Land values are influenced by the existing land use pattern and the configuration and capacity of transportation and utility facilities. The urban land market remains a major determinant of land use, influenced by the characteristics of transportation and utility systems.

Social determinants of urban land use are less understood than economic factors, yet sociologists explain these patterns through urban ecology, focusing on how humans adapt to their urban environment. Key processes in this adaptation include dominance, where one area, often the central business district, exerts control over others; concentration, which refers to the clustering of specific social groups or activities; segregation, the separation of different social groups into distinct areas; invasion, the encroachment of one group into an area previously dominated by another; and succession, the gradual replacement of one group or activity by another over time.

Physical determinants of urban development, including topography, drainage patterns, existing infrastructure, and natural features, play a crucial role in shaping where and how urban growth occurs. The land's physical shape and water flow influence its suitability for various uses, while the existing layout of roads, buildings, property lines, and utility systems dictate the feasibility of new developments. Additionally, the availability of essential utilities such as water, sewer, electricity, and telecommunications is critical for urban land use. Soil properties, particularly the depth to bedrock, impact construction capabilities, and natural features like wetlands, woodlands, and floodplains significantly affect planning and development decisions.

The promotion of the public interest is a fundamental reason for public planning. While economic, social, and physical conditions shape land use, governmental regulations are crucial to ensure public health, safety, and general welfare. This includes zoning, building codes, and other planning tools.

5.6 Factors of Land Availability

Evaluating land availability involves a comprehensive analysis of various factors. This in turn determines the fitness of land for specific uses. Key factors considered in this evaluation include ([Malczewski, 2004], [Fresco et al., 1992], [Mugiyo et al., 2021])

- Soil characteristics. These include soil type, texture, depth, pH, and nutrient content. These attributes influence the land's capacity to support agricultural activities and other uses.
- Water availability: The availability and quality of water resources are critical, as they affect irrigation potential and overall land productivity. Factors such as rainfall patterns, drainage capacity, and proximity to water bodies are assessed.

- **Topography:** The slope and elevation of the land significantly impact its suitability for different uses. Steep slopes may be prone to erosion and less suitable for agriculture, while flat areas are often more desirable for farming.
- **Land cover and Use:** Existing land use patterns and vegetation cover provide insights into the current state of the land and its potential for future development. This includes assessing urban areas, forests, and agricultural lands.
- **Environmental Constraints:** Factors such as erosion risk, salinity, flooding potential, and other environmental hazards are evaluated to determine limitations on land use.
- **Socioeconomic Factors:** The social context, including population density, infrastructure availability (like roads), and economic viability of proposed land uses, plays a crucial role in suitability assessments.
- **Data Quality and Availability:** The effectiveness of land suitability evaluations also depends on the quality and quantity of data available for analysis. This includes both historical data and contemporary surveys.

By systematically analyzing these factors, planners can classify land according to its suitability for various purposes, facilitating informed decision-making in land use planning ([Ayehu and Besufekad, 2018] and [Kassie et al., 2022]).

5.6.1 Factors of Land Availability in Rural Areas

In rural areas, several factors significantly influence land availability, particularly for agricultural purposes ([Cintina et al., 2018], [Belay and Manig, 2004],[Reynolds and Tower, 1978]). These factors include:

- **Ecological Factors:** The natural characteristics of the land, such as its topography, vegetation, and drainage capabilities, determine its suitability for various agricultural activities. For instance, swampy or arid lands may limit certain types of farming but could be suitable for others, like livestock grazing or specific crops.
- **Climatic Factors:** Weather patterns, including rainfall, temperature, and sunlight exposure, are crucial in assessing land availability. Areas with favorable climatic conditions support more productive agricultural practices, while harsh climates can restrict land use options.
- **Population Density and Growth:** In rural areas with low population density, land is generally more available for agricultural use. Conversely, increasing population pressures can lead to competition for land resources, making it less accessible.
- **Economic Factors:** The economic context affects land availability through aspects such as land prices and the financial capacity of individuals or communities to acquire land. Economic constraints can limit access to land for farming or other uses.
- **Soil Types:** The physical and chemical properties of soil play a vital role in determining land suitability for agriculture. Different soil types have varying capacities for supporting crops, affecting overall land availability for agricultural purposes.
- **Socio-Cultural Practices:** Cultural beliefs and practices can influence land use decisions and availability. For example, certain lands may be reserved for religious or community purposes, limiting their availability for agricultural activities.

- **Land Tenure Systems:** The legal frameworks governing land ownership and use significantly impact availability. In many rural areas, communal or inherited land tenure systems can restrict individual access to larger plots of land necessary for sustainable farming practices.
- **Government Policies:** Local and national policies regarding land use and management can either facilitate or hinder access to rural land. Policies aimed at conservation or urban development can reduce the amount of land available for agriculture.

These factors collectively shape the dynamics of land availability in rural areas, influencing agricultural productivity and sustainability in these regions.

5.6.2 Factors of Land Availability in Urban Areas

In evaluating land availability in urban areas, several critical factors come into play ([Wegener, 2004], [Rodrigue, 2020], [Kaiser et al., 1995], and [Fentahun et al., 2025]):

- **Location and Accessibility:** Proximity to key infrastructure such as transportation routes, public transit systems, and essential services significantly influences land availability. Areas with better accessibility tend to have higher demand and value, impacting their availability for development.
- **Zoning Regulations:** Government policies and zoning laws dictate what types of activities can occur on specific parcels of land. These regulations can restrict or promote land use, affecting the overall availability of land for residential, commercial, or industrial purposes.
- **Market Demand:** The demand for land in urban areas is driven by economic factors, including population growth and urbanization trends. High demand often leads to increased competition for available land, impacting its accessibility and affordability.
- **Socioeconomic Factors:** Variables such as household income levels, demographic characteristics, and social equity influence who has access to land. Disparities in income can lead to unequal access to available land resources.
- **Environmental Considerations:** Natural features and environmental constraints (e.g., flood zones, protected areas) can limit the availability of land for development. Urban planners must consider these factors to ensure sustainable development practices.
- **Legal Frameworks:** The effectiveness of legal and institutional frameworks governing land tenure and ownership plays a crucial role in determining land availability. Ineffective systems can lead to disputes and hinder access to land.
- **Infrastructure Development:** The presence of existing infrastructure (utilities, roads, etc.) enhances land availability by making it more attractive for development. Conversely, areas lacking infrastructure may be less desirable and thus less accessible.

These factors collectively shape the landscape of urban land availability, influencing how cities grow and develop over time.

5.6.3 Basic differences in land availability analysis between urban and rural areas

The analysis of land availability in urban and rural areas involves distinct factors due to the differing characteristics and needs of these environments ([Tacoli, 2003], [Chigbu, 2021], and [Nabutola, 2009]). Here are the basic differences:

- **Population density and demand:** Urban areas are characterized by high population density, leading to intense competition for limited land resources. This high demand often results in increased land prices and a scarcity of available parcels for development. In contrast, rural areas typically have lower population densities, resulting in more abundant and less expensive land. The demand for land is generally lower, which can make it more accessible for agricultural or large-scale projects.
- **Regulatory environment:** Urban land use is heavily regulated through zoning laws, building codes, and environmental regulations. Developers must navigate complex legal frameworks to acquire and develop land, which can prolong the approval process. But rural land acquisition often faces fewer regulatory hurdles, but it may involve more significant environmental considerations due to diverse ecological conditions. However, informal land tenure systems can complicate access.
- **Infrastructure availability:** Urban areas usually benefit from established infrastructure such as roads, utilities, and public transportation systems, facilitating easier access to land for development. Conversely, rural areas may lack adequate infrastructure, necessitating substantial investment in developing roads and utilities to make land usable for various purposes.
- **Environmental considerations:** Environmental assessments in urban areas often focus on mitigating impacts from high-density developments and ensuring compliance with strict regulations to protect public health and safety. Whereas, in rural settings, environmental factors like soil quality, water availability, and topographical challenges are critical in assessing land suitability for agricultural use or other developments.
- **Economic context:** Economic factors in urban areas include higher land values driven by demand for residential and commercial spaces, which can limit accessibility for lower-income groups. However, as rural economies are often centered on agriculture, land availability is influenced by agricultural viability and the economic capacity of local farmers to invest in land improvements.

These differences highlight the unique challenges and considerations that planners and developers must address when analyzing land availability in urban versus rural contexts.

5.7 Land Suitability Analysis

Land suitability analysis is a method used to assess the suitability of land for various uses based on multiple criteria, such as soil quality, topography, climate, and accessibility. This method involves the use of Geographic Information Systems (GIS) to analyze spatial data and identify the most suitable areas for different types of development. ([Collins et al., 2001], [Malczewski, 2004])

Land suitability analysis evaluates the fitness of a given area for a specific land use type based on its inherent characteristics and external factors. This process is fundamental to sustainable land

use planning as it helps identify the most appropriate uses for different land parcels, minimize conflicts between competing land uses, optimize resource allocation and management, reduce environmental degradation and promote conservation, and support evidence-based decision-making in planning processes

5.7.1 Factors Influencing Land Suitability

Several factors influence land suitability, which can be broadly categorized into three main groups. First are the physical factors including topography (slope, elevation, aspect), soil properties (texture, depth, fertility, drainage), climate (temperature, precipitation, solar radiation) and geology and geomorphology. Secondly are the environmental factors related to biodiversity and ecosystem services, natural hazards (flood risk, erosion potential, seismic activity, water resources (surface and groundwater availability) and air quality and pollution levels. Lastly are the socioeconomic factors that include population density and distribution, economic activities and employment patterns, infrastructure and accessibility, land tenure and property rights and cultural and historical significance.

5.7.2 Steps in Land Suitability Analysis

The process of land suitability analysis typically involves the following detailed steps:

- Define the planning area and establish goals through which the study area boundaries are delineated and the planning objectives and stakeholder requirements are identified.
- Identify land use types for evaluation by listing potential land uses relevant to the planning area and considering the current land uses and future development scenarios.
- Select relevant evaluation criteria: Choose criteria that reflect the physical, environmental, and socioeconomic factors and ensure criteria are measurable and relevant to the planning goals.
- Collect and analyze data for each criterion: Gather data from various sources (field surveys, remote sensing, existing databases) and process and standardize data for analysis.
- Assign weights to criteria based on their relative importance: Use expert knowledge and stakeholder input to determine weights and apply methods such as Analytic Hierarchy Process (AHP) or Delphi technique.
- Combine criteria ratings to obtain tentative land suitability classifications: Use GIS-based multi-criteria evaluation techniques and apply weighted overlay or fuzzy logic methods.
- Validate and refine the suitability classifications: Conduct field verification and expert review and adjust classifications based on local knowledge and constraints.
- Produce final land suitability maps: Generate maps showing suitability levels for different land uses and provide accompanying reports explaining the analysis and results.

5.8 Steps in Land Use Preparation

The steps in land use plan preparation involve a systematic approach to determine how land should be used in the future. This process includes several key steps, from data collection to plan design. (Kurt W. B., 2010))

- **Delineate Planning Area:** The first step is to define the geographical boundaries of the area to be covered by the land use plan. This involves identifying the specific region that will be subject to the planning process.
- **Assemble Needed Basic Data:** The next step is to gather relevant data which is essential for making informed decisions. This includes 1) **Data on existing Land Use Data:** A comprehensive land use survey is necessary to determine how land is currently used, including residential, commercial, industrial, and recreational purposes. This involves mapping and classifying existing land uses, and includes consideration of mixed uses. 2) **Physiographic Data:** This includes data on the physical characteristics of the planning area, such as topography, drainage patterns, soils, and the presence of natural resources like wetlands and woodlands. 3) **Socio-economic Data:** This involves collecting data on the population, employment, income, and other relevant socio-economic factors within the planning area. 4) **Environmental Data:** Data relating to the natural resource base, including floodplains, steep slopes, and environmental corridors, needs to be gathered. 5) **Transportation and Utility Data:** Information on existing transportation networks and utility systems is also required. 6) **Mapping:** Good mapping is an essential foundation for the collection, presentation, and application of data. Maps should accurately show property lines, topographic features, and other relevant data.
- **Delineate Existing and Potential Planning Districts:** Based on the assembled data, the planning area is divided into existing and potential planning districts. This may involve identifying areas that are suitable for specific types of development or conservation.
- **Estimate Future Land Requirements:** This step involves forecasting future land needs based on projected population growth and economic development. Various methods may be used to estimate future land requirements, such as land use accounting and adopted standards. These include 1) **Land Use Accounting Method:** This method uses ratios based on past trends to project the amount of land needed for various uses. For example, the amount of residential, commercial, and industrial land needed can be estimated based on the projected population and employment. The land use accounting method calculates the amount of land required for different purposes based on a projected population, using historical ratios to calculate land allocation. An example of this method is calculating the area required for a new industrial town with 3,300 employees, including residential, commercial, and industrial land. 2) **Adopted Standards:** Standards can also be used to estimate land use requirements. For example, a community might set a standard of net area per unit of people for major governmental and institutional land. 3) **Intuitive Judgment:** While quantitative methods are preferred, intuitive judgment may also be used to estimate future land needs.
- **Land Use Design:** Land use design involves the allocation of land for various purposes based on the collected data and projections. It also involves arranging these different uses in a way that is compatible with the existing environment, topography, and infrastructure. Firstly, this process should take into account the protection of the Natural Resource Base. Land use design should ensure that flood lands, wetlands, woodlands, and wildlife habitats are protected. **Identification of developable and undeveloped Land:** It is important to distinguish areas that are suitable for development from those that are not. Secondly, it is important to conduct spatial allocation of land uses. Accordingly, land use types are spatially allocated, starting with major open space reservations, followed by special use requirements like cemeteries and airports. These are located to protect the natural resource base.

These steps should lead to a well-structured land use plan that integrates various aspects of the urban environment. The land use plan should include a map and text that set out recommended standards for population density, commercial and industrial employment intensity, and building intensity. It should be distinguished from a land use map, which represents existing land uses, and a zoning map, which regulates land use, density, and building coverage.

5.9 Basics of Future Land Demand Forecasting

5.9.1 Elements of Land Forecasting

Forecasting future land demand is essential for effective long-term planning, ensuring that land use decisions today can accommodate future needs and challenges. Key elements in forecasting future land demand include ([Montgomery et al., 2013], [Henderson and Thisse, 2004], [Shlomo et al., 2012], [Un-Habitat, 2020],[Batty, 2018], [Change, 2007]):

- Population growth projections. This should consider natural increase (birth rates minus death rates), migration patterns (internal and international) and age structure and household composition changes.
- Economic trends and development plans. This involves sectoral growth projections (e.g., industry, services, agriculture), investment patterns and economic policies and employment forecasts and labor market dynamics.
- Changing land use patterns and preferences. This process should take into account urbanization trends and urban sprawl, shifts in housing preferences (e.g., density, typology), and changes in commercial and industrial space requirements.
- Technological advancements affecting land use efficiency. This component should consider smart city technologies and urban management systems, innovations in transportation (e.g., autonomous vehicles, shared mobility), and advancements in building technologies and vertical farming.
- Environmental constraints and conservation goals. This should take into account issues of climate change impacts and adaptation strategies, biodiversity conservation targets, and water resource management and protection,

5.9.2 Steps in Land Demand Forecasting

A comprehensive approach to forecasting land demand involves in a number of steps as discussed below ([Seto et al., 2012], [Burchell et al., 2002a], [Bongaarts, 2009], [Florida, 2017],[Gehl, 2022], [Forman, 2014], [Albrechts, 2004],[Healey, 2006], [Pontius and Malanson, 2005]) :

- Analyze historical land use trends. This involves collecting and analyzing time-series data on land use changes, and Identify patterns and drivers of land use change.
- Assess current land use patterns and constraints by mapping existing land uses and zoning regulations and identifying physical and regulatory constraints on development.
- Project population growth and demographic changes by using cohort-component methods for population projections and considering migration scenarios and their impacts.

- Evaluate economic development plans and projections through reviewing national and regional economic forecasts and assessing sectoral growth projections and their land requirements.
- Consider technological factors affecting land use efficiency by evaluating the potential impact of emerging technologies on land use and incorporating scenarios for technology adoption and diffusion.
- Incorporate environmental and policy constraints. This should consider climate change projections and adaptation strategies as well as Integrate conservation goals and protected area designations.
- Develop scenarios for future land demand by creating a multiple scenarios based on different assumptions and considering best-case, worst-case, and most likely scenarios.
- Use quantitative models to project land demand through applying regression analysis, system dynamics, or agent-based models and integrating spatial and temporal dimensions in the modeling process.
- Validate projections through expert consultation and stakeholder engagement by conducting workshops and interviews with experts and stakeholders and when necessary refine projections based on local knowledge and expectations.
- Regularly update forecasts as new data becomes available by establishing a monitoring system to track key indicators and revising projections periodically to maintain accuracy.

5.10 Land Classification Methods

Land classification is a fundamental aspect of land use planning, providing a systematic way to categorize land based on its characteristics and potential uses. Different classification methods are applied in urban, periurban, and rural contexts ([Kaiser et al., 1995], [Commission, 2021], [Anderson, 1976], [Wang and Vom Hofe, 2007]).

5.10.1 Urban Land Classification

In urban areas, land classification often focuses on:

- Residential zones classification into high-density (e.g., apartment buildings, condominiums), medium-density (e.g., townhouses, duplexes) and low-density (e.g., single-family homes) residential zones.
- Commercial and industrial zones classification into central business districts, neighborhood commercial areas and light and heavy industrial zones.
- Mixed-use areas including live-work spaces and transit-oriented developments.
- Public spaces and recreational areas classification as parks and open spaces, sports facilities and playgrounds and cultural and civic centers.
- Transportation and infrastructure corridors classification as roads and highways, rail lines and stations and utility corridors.

5.10.2 Peri urban Land Classification

Peri urban areas, being transitional zones between urban and rural landscapes, require specific classification approaches. These are:

- Urban expansion zones into planned development areas and infill development sites.
- Agricultural preservation areas as prime agricultural land and community-supported agriculture zones.
- Ecological buffer zones into greenbelts and wildlife corridors and wetland and riparian areas.
- Industrial and commercial development areas as business parks and technology hubs and logistics and distribution centers.
- Mixed-use transition zones as urban-rural interface areas and agri-tourism zones.

5.10.3 Rural Land Classification

Rural land classification typically includes:

- Agricultural land. It recognizes three categories: cropland (annual and perennial crops), pasture and range land and orchards and vineyards.
- Forestry areas. It includes three classes of production forests, protected forests and agro-forestry zones.
- Conservation and protected areas. It is classified into three classes as national parks and reserves, wildlife sanctuaries and water shade protection areas,
- Rural settlements. It has two classes; villages and hamlets and rural residential areas.
- Resource extraction zones. It includes the two sub classes of mining and quarrying areas and oil and gas extraction sites.

6 Land use and Spatial Planning: Similarities and differences

Land use and spatial planning methods are essential frameworks for managing land resources effectively, yet they exhibit both similarities and differences that reflect their distinct objectives and contexts. Both approaches aim to optimize land use, promote sustainable development, and address the needs of various stakeholders through systematic assessment and planning processes. They share common methodologies, including stakeholder engagement, environmental assessments, and the establishment of goals and objectives. However, they differ in their focus.

Land use planning primarily emphasizes the allocation of land for specific uses—such as agriculture, residential, or commercial—while spatial planning encompasses a broader perspective that integrates social, economic, and environmental policies to guide the development of entire regions or urban areas. Additionally, spatial planning often involves a more complex set of tools and techniques to manage interactions among different land uses at various scales, reflecting the intricate relationships within urban environments compared to rural settings. This distinction highlights the necessity for tailored strategies that address the unique challenges and opportunities presented by different geographical contexts.

By and large, land use planning is concerned with the specific use of land, while spatial planning is concerned with the overall spatial organization of land and its uses. Land use planning and spatial planning are both processes that are used to manage the use of land. However, there are some key differences between the two.

- Land use planning is focused on the specific use of land, such as residential, commercial, or industrial. It typically involves zoning regulations and other tools to ensure that land is used in a way that is consistent with the goals of the plan
- Spatial planning is a more holistic approach that considers the interaction of different land uses, as well as the relationship between land use and other factors, such as transportation, infrastructure, and the environment. It typically involves a more strategic approach to planning, and it may include tools such as strategic planning, master planning, and environmental impact assessment.

Spatial planning and land use planning share common objectives and methodologies, but they differ in terms of their scope and focus. Both approaches involve a systematic and iterative process that includes data collection, analysis, stakeholder engagement, goal setting, plan formulation, and implementation. They both rely on tools such as GIS, remote sensing, and participatory approaches to support decision-making and community engagement.

The key difference lies in the scale and breadth of their application. Spatial planning operates at a broader scale, encompassing regional or national spatial issues and considering various sectors and stakeholders. It provides a strategic framework that guides land use planning and ensures coherence and integration of land use with other spatial elements. Land use planning, on the other hand, focuses on more localized and specific land use decisions within a defined jurisdiction, addressing the detailed regulations, guidelines, and site-specific considerations.

Nevertheless, it is important to integrate spatial planning and land use planning. Spatial planning provides the overarching strategic framework, goals, and policies, while land use planning translates those strategies into practical guidelines and regulations at the local level. The integration ensures the alignment of local land use decisions with broader spatial development objectives, promoting coherence, efficiency, and sustainability in the allocation and management of land and resources.

6.1 Similarities between Land Use and Spatial Planning

Both land use planning and spatial planning share several common objectives and principles. Their primary goal is to create sustainable, efficient, and equitable environments that support economic development, environmental protection, and social well-being. Key similarities include:

- **Sustainability:** Both approaches prioritize sustainable development, ensuring that land and resources are used efficiently and responsibly to meet present and future needs.
- **Public Participation:** Engaging stakeholders and the community in the planning process is a core principle for both land use and spatial planning. This involvement ensures that planning decisions reflect the needs and aspirations of the population.
- **Integration of Policies:** Both planning types integrate various policy areas, such as transportation, housing, and environmental protection, to create cohesive and comprehensive development plans.
- **Regulatory Frameworks:** Both land use and spatial planning rely on regulatory frameworks and guidelines to manage development and ensure compliance with planning objectives.

6.2 Differences between Land Use and Spatial Planning

Despite their similarities, land use planning and spatial planning differ in scope, focus and methodologies. Key differences include:

6.2.1 Scope and Scale

Land use planning typically focuses on specific parcels of land or localized areas, dealing with zoning, land use regulations, and site-specific developments. In contrast, spatial planning has a broader scope, addressing regional, national, or even transnational spatial organization.

- **Holistic Approach:** Spatial planning adopts a holistic approach, considering multiple dimensions of development, such as economic, social, and environmental factors, in a coordinated manner. Land use planning, while comprehensive, is more focused on the physical use of land and its regulatory aspects.
- **Strategic Nature:** Spatial planning is inherently strategic, aiming to create long-term visions and frameworks for territorial development. Land use planning, on the other hand, often involves more immediate and tactical decisions related to land allocation and zoning.
- **Policy Integration:** While both approaches integrate policies, spatial planning places greater emphasis on aligning spatial policies with broader economic, social, and environmental goals. Land use planning tends to focus more on regulatory compliance and the efficient use of land resources.

To illustrate the similarities and differences between land use and spatial planning, one can examine case studies from different regions

Case Study 1: Singapore

- Land Use Planning: Singapore's Urban Redevelopment Authority (URA) uses a detailed Master Plan to guide land use and development. The plan includes zoning regulations, land use allocations, and density controls to manage the city's limited land resources efficiently.
- Spatial Planning: Singapore also employs a broader spatial planning strategy through its Concept Plan, which provides a long-term vision for the city's development, integrating land use with transportation, housing, environmental sustainability, and economic growth (Yuen, 1999).

Case Study 2: European Union (EU)

- Land Use Planning: Various EU member states have their own land use planning systems, focusing on zoning regulations, land use designations, and local development plans.
- Spatial Planning: The EU promotes spatial planning through the European Spatial Development Perspective (ESDP) and the Territorial Agenda, which aim to achieve territorial cohesion, balanced development, and sustainable growth across the continent. These frameworks encourage cross-border cooperation and integrated regional development ([Faludi, 2000], [Healey, 2006]).

Case Study 3: United States

- Land Use Planning: In the U.S., land use planning is primarily managed at the local level, with municipalities and counties developing zoning ordinances, land use plans, and development guidelines.
- Spatial Planning: While the U.S. lacks a formal national spatial planning framework, regional planning organizations and initiatives, such as the Metropolitan Planning Organizations (MPOs) and the Regional Plan Association (RPA), engage in spatial planning efforts to address regional development issues, transportation, and environmental sustainability ([Cullingworth, 2004]).

7 Case Studies and Best Practices

7.1 Successful Land Use Plans

7.1.1 Case Study 1: Singapore

Singapore is known for its highly efficient and sustainable land use planning, despite its limited land area and high population density (Yuen, 1999; Tan, Z. Z., et al., 2013). The Key Features are:

- **Comprehensive Master Plan:** Singapore's Urban Redevelopment Authority (URA) creates detailed Master Plans that guide land use and development. These plans include zoning regulations, density controls, and land use allocations
- **Transit-Oriented Development (TOD):** The city-state promotes TOD by integrating land use planning with public transportation systems, reducing reliance on automobiles and enhancing accessibility.
- **Green Infrastructure:** Singapore incorporates extensive green infrastructure, such as parks, green roofs, and vertical gardens, to improve urban livability and environmental sustainability.

7.1.2 Case Study 2: Curitiba, Brazil

Curitiba is renowned for its innovative and sustainable urban planning practices, particularly in public transportation and green space management ([Rabinovitch and Hoehn, 1995]). The key features are the following.

- **Bus Rapid Transit (BRT) System:** Curitiba's BRT system is a model for efficient and cost-effective public transportation. It integrates with land use planning to support high-density development along transit corridors.
- **Green Space Management:** The city prioritizes the creation and maintenance of green spaces, including parks and natural reserves, enhancing environmental quality and residents' well-being.
- **Participatory Planning:** Curitiba engages residents in the planning process through public consultations and participatory budgeting, ensuring community needs are addressed.

7.1.3 Case Study 3: European Spatial Development Perspective (ESDP)

The ESDP is a comprehensive framework for spatial planning in the European Union, aimed at achieving balanced and sustainable development across member states ([Faludi and Waterhout, 2012], [Davoudi, 2003]). The key features are the following.

- **Territorial Cohesion:** The ESDP promotes territorial cohesion by reducing regional disparities and fostering balanced development.
- **Poly centric development:** The framework encourages the development of multiple growth centers to prevent over concentration in single urban areas.

- Sustainable Urban Systems: The ESDP integrates environmental, economic, and social sustainability into spatial planning policies.

7.1.4 Case Study 4: Melbourne 2030 Strategy, Australia

Melbourne 2030 is a strategic plan aimed at guiding the city's growth and development over three decades, focusing on sustainability and livability ([Mees, 2009],[Goodman et al., 2016]). Key features are:

- Urban Growth Boundaries: The strategy establishes urban growth boundaries to contain urban sprawl and protect rural and natural areas.
- Mixed-Use Development: Melbourne 2030 promotes mixed-use development to create vibrant, walkable communities and reduce car dependency.
- Public Transport Enhancement: The plan emphasizes the expansion and improvement of public transportation networks to support sustainable mobility.

7.2 Best Example in Spatial Planning: The case of Germany

Looking at international experiences in spatial planning can provide valuable insights and lessons that can be applied to the Ethiopian context. Several countries have successfully implemented spatial planning strategies and achieved positive outcomes in terms of sustainable development, efficient land use, and improved quality of life for their citizens. A good example is Spatial Planning in Germany.

7.2.1 Spatial Planning in Germany

Germany has developed a highly regarded spatial planning system that emphasizes long-term vision, public participation, and sustainability. The German experience highlights the importance of strategic planning, regional coordination, and effective governance structures. Lessons from Germany include the need to integrate sustainability principles into spatial planning, establish clear governance mechanisms, and involve stakeholders in decision-making processes. Germany is a federal country with four levels of government. Below the national government, 16 federal states exist.

At an intermediate level, there are 402 administrative districts and at the local level 11 092 municipalities. For historical reasons three of the federal states – Berlin, Hamburg, and Bremen – cover only the territory of individual large cities and combine the functions of states and the municipal level. While smaller municipalities usually belong to a district, larger ones with roughly 100 000 or more inhabitants are independent of districts and combine the functions of municipal and district administration. Germany is a federal country with three levels of administration; namely, the federation, the state (Lander) and municipalities.

The planning system also recognizes another level, namely at regional level ([for Economic Co-operation and Development, 2008]). This decentralized political structure is also reflected in the system of spatial planning in Germany, in which there is a statutory division of competencies and responsibilities between the three levels, each with its own legal framework, organizational structures and substantive focus. This is shown in the Figure below ([Pahl-Weber and Henckel, 2008])

State Structure	Tiers of Planning	Legal Foundations	Planning Instruments		Material Content
Federation	Spatial planning at Federal level	Spatial Planning Act	—		→ Principles of comprehensive spatial planning
Länder	Spatial planning at Land level	Spatial Planning Act and Land planning legislation	comprehensive, supra-sectoral plans	→ Spatial structure plan → Spatial and sectoral sub-plans	Aims of comprehensive spatial planning
	Regional planning			→ Regional plan → Regional masterplan	
Municipalities	Urban land-use planning	Federal Building Code	Urban land-use plans	→ Preparatory land-use plan	Representation of land-use type
				→ Local development plan	Designations of urban development

Figure 1: The German Land Use Planning System

Each level of planning is executed on the basis specific legal basis. However each of these levels are closely linked with each other in accordance with the so called ‘Principle of Countervailing Influences’ (or “feedback principle”) as well as through statutory requirements that demand for the exchange of information, participation and coordination and adherence to designation or guidelines contained in certain plans emanating from a higher spatial levels. Therefore, the spatial planning system requires coordination between the three levels of governments as well as between the different sectoral planning having a spatial dimension ([Turowski, 2002], [for Building and Planning, 2001]).

Two basic concepts define spatial planning in Germany. These are the concepts of ‘Raumordnung’ (Spatial ordering) which is a comprehensive framework for planning set by the Federal Government and the concept of “urban development and order”. The Federal Constitutional court in 1954 defined “Raumordnung” as

“... a comprehensive (i.e. supra-sectoral), supra-local and superordinate tier of planning aimed at establishing spatial order and setting the direction for development.

The attribute “comprehensive” emphasizes the function of co-coordinating and harmonizing those elements of the various types of sectoral planning which have spatial impacts. “Supra-local” indicates that the territory affected by this tier of planning extends beyond the boundaries and jurisdictions of local authorities. Taken together, the comprehensive and supra-local dimensions of “Raumordnung” justify the “superordinate” status it enjoys in the German planning system. Accordingly, in deciding on plans and measures with spatial impacts, all planning authorities or agencies are required to take account of and to adhere to what are known as the requirements of comprehensive spatial planning. Plans and other measures are deemed to have spatial impacts when they involve taking or occupying land, or where they influence spatial development or the function of an area [Turowski, 2002].

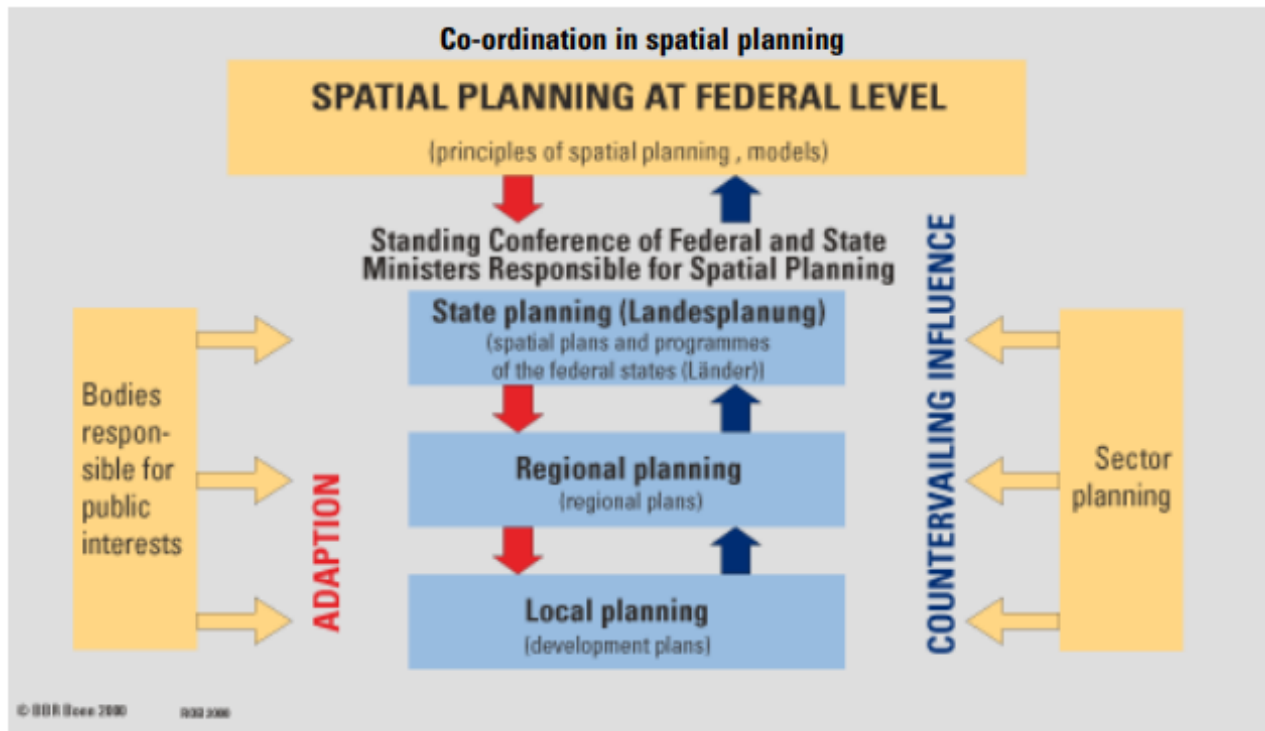


Figure 2: Principle of Countervailing Influences

7.2.2 Planning Laws

The German spatial planning system is based on a legal framework, which includes the Basic Law, the Federal Spatial Planning Act, and the state spatial planning laws. These laws are exercised at the federal, state and local level as explained below.

I. Federal Level

The Basic Law guarantees the right to spatial planning and establishes the federal government's responsibility for coordinating spatial development. The Federal Spatial Planning Act sets out the goals and principles of spatial planning and the procedures for the preparation of spatial plans, goals and principles of spatial planning in Germany, and it also establishes the federal government's role in spatial planning. The most important spatial planning laws at the national level in Germany are the following:

- **Spatial Development Concept and Strategy in Germany (Raumordnungspolitisches Gesamtkonzept für Deutschland):** The Spatial Development Concept and Strategy in Germany is a high-level document that sets out the overall goals and principles of spatial planning in Germany. It is updated every 10 years.
- **Spatial Planning Report (Raumordnungsbericht):** The Spatial Planning Report is a comprehensive report that provides an overview of the current state of spatial development in Germany. It is published every 2 years.
- **Federal Spatial Planning Guidelines (Raumordnungsleitbilder):** The Federal Spatial Planning Guidelines are a set of guidelines that provide more detailed guidance on how to implement the goals and principles of spatial planning in Germany. They are updated every 5 years.

II. State level

The state spatial planning laws elaborate on the Federal Spatial Planning Act and set out the specific goals and policies for the respective states. The spatial planning laws at the state level in Germany are based on the Federal Spatial Planning Act (Raumordnungsgesetz, ROG) and the state spatial planning laws. The ROG sets out the goals and principles of spatial planning in Germany, and the state spatial planning laws elaborate on these goals and principles and set out specific requirements for the states. The most important spatial planning laws at the state level in Germany are the following:

- State Spatial Planning Acts (Raumordnungsgesetz der Länder): The State Spatial Planning Acts are the main legal basis for spatial planning in the states. They set out the goals and principles of spatial planning in the states, and they also establish the state governments' role in spatial planning.
- Regional Plans (Regionalpläne): The Regional Plans are spatial plans that are developed by the states. They cover large areas of land and identify areas for different types of land use, such as residential, commercial, industrial, and agricultural.
- Local Plans (Bebauungspläne): The Local Plans are spatial plans that are developed by municipalities. They cover smaller areas of land and specify the use of land in a particular area.

The spatial planning laws at the state level in Germany give the state governments a significant role in spatial planning. The state governments are responsible for developing spatial plans for their territories, and they also have the power to approve or reject spatial plans that are developed by municipalities.

III. Local level

The spatial planning laws at the level of municipalities in Germany are based on the Federal Spatial Planning Act (Raumordnungsgesetz, ROG) and the state spatial planning laws. The ROG sets out the goals and principles of spatial planning in Germany, and the state spatial planning laws elaborate on these goals and principles and set out specific requirements for municipalities. The spatial planning laws at the level of municipalities in Germany give municipalities a great deal of discretion in how they plan their territory. However, the laws also impose a number of requirements on municipalities, such as the need to ensure that their plans are consistent with the goals and principles of spatial planning higher levels.

The most important spatial planning laws at the level of municipalities in Germany are the following:

- Preparatory Land Use Plan (Vorbereitender Bauleitplan): The Preparatory Land Use Plan is a general plan that outlines the future development of a municipality. It covers the entire territory of the municipality and identifies areas for different types of land use, such as residential, commercial, industrial, and agricultural.
- Binding Land Use Plan (Bebauungsplan): The Binding Land Use Plan is a more detailed plan that specifies the use of land in a particular area. It includes maps, regulations, and other information about the planned use of land.
- Development Ordinance (Bebauungsordnung): The Development Ordinance is a set of regulations that govern the development of land in a municipality. It includes rules about the size and type of buildings that can be built, the density of development, and the protection of the natural environment.

7.2.3 Levels of Spatial Planning

Spatial planning is an area-related public sector task that is subdivided into comprehensive (or overall) planning focusing on the supra-local (spatial planning) and local levels (urban land-use planning) as well as sectoral planning. The comprehensive spatial planning is conducted at four levels: National, state, regional and municipal. Specifically, the four levels of spatial planning are;

1. Comprehensive Spatial Planning at Federal Level (Raumordnung)
2. Comprehensive Spatial Planning at Land Level (Landesplanung)
3. Regional Planning
4. Urban Land-Use Planning

In addition to the comprehensive spatial plans exercised at different levels, sectoral planning is also exercised in parallel in order to produce sectoral plans that are designed to prepare and implement systematic programs of measure needed to support development within a specific and clearly defined sector. Sectoral planning is the task of the relevant sectoral authority which is defined by the federal level legislation. As the sector plans usually transcend the boundaries of local governments, there is a specific legislation (spatial planning clause) that requires the sector plans to align and coordinate with those of the comprehensive spatial planning, namely; state-level spatial planning and regional planning ([Turowski, 2002]).

I. Comprehensive Spatial Planning at Federal Level (Raumordnung)

The German basic law empowers the federation to enact framework of legislation (i.e. spatial planning act) for spatial planning dealing with the fundamental aspects of spatial planning and to matters of general principle while leaving the tasks of preparing detailed and binding goals for spatial development of the country to the lower tier of government, namely the Laender. Moreover, the federation is also responsible for the matters regarding the spatial structure of the whole country that is to be addressed by the comprehensive spatial planning. Nevertheless, the federation is required to prepare as a number of binding rules in form of ‘principles of spatial planning’. These principles lay down the material guide line for spatial order and development and for ensuring the ‘ordered’ structure of the federal territory. Accordingly, any plan and measure having a spatial impact be it in the preparation or in the decision making phase, have to take into account these guidelines. The lower tier of government (or the Land) is required to elaborate the guidelines by adding more concrete details and substances in the aims of spatial planning when developing their respective spatial structure plans.

Functionally, the comprehensive spatial planning strives to realize the principles of spatial planning in the frame work of achieving the vision of sustainable spatial development. Furthermore, the federal-level spatial planning has to promote coordination and collaboration among the states (Laender) so as to develop a national spatial development framework; named as “Perspectives for the Spatial Development of the Federal Territory and of Regions Extending beyond the Boundaries of Individual Lander” that is based on the spatial structure plans of each of the states. This common framework facilitates cooperation with European Union plans and cross border cooperation in spatial planning with the neighboring countries.

In addition to the role of the federation in terms of approving framework of legislation and carrying out the responsibilities stated in the spatial planning act, it has also important legislative and administrative functions related to public policy issues with impact on the spatial structure and development of the Federal territory. These includes sector plans, like the transport, with profound spatial impact, capital investment and grants as well as financial and taxation

systems. Finally, the relevant authority for federal level spatial planning is also required to present at fixed intervals to the Federal parliament, the Bundestag, the “Spatial Development Report”. The report include an audit report of the current state of the spatial structure of the country, current trends in spatial development , both planned and implemented, in the whole country, as well as information on Federal and EU plans and statements of on spatial impact of EU policies ([Turowski, 2002]).

II. Comprehensive Spatial Planning at Land Level (Landesplanung)

The comprehensive spatial planning at the level of the state/land is known as “Landesplanung” which is defined as component of public administration accountable for preparing comprehensive and superordinate spatial structure plans and coordination of plans and measure with spatial impact. Therefore, ‘Landesplanung’ has both planning functions and coordination of spatial development and achieving the desired spatial structure. The legal basis of the spatial plan is specified in and regulated by the spatial planning act and in more detailed manner in the specific spatial planning legislation of each state/Land which grant it a number of planning instruments.

The planning function of the comprehensive spatial planning empowers each state, with the exception of the city states, to produce comprehensive and superordinate spatial structure plans for their respective territories. In accordance with the basic principles of spatial planning outlined in the “Spatial Planning Act”, the spatial structure plans at state level are required to formulate mid-term “aims of spatial planning” relevant to their territory and by adding more concrete details of those specified in the spatial planning act as well as ensuring their consistency with the goals of sustainable development. As per the Landesplanung and relevant federal laws, all plans and planning measures as well as private sectors involved in the delivery of public tasks are required to respect those binding aims.

The spatial structure plans are the central instruments of state/Land-level planning. The planning process, from the inception to the approval of spatial structure plans, follows three common and consecutive procedures in all states/Laender; namely; drafting, participation and formal approval. The final stage is the most important stage in which the plan is formally approved and acquires legal status and thus becomes binding. This binding legal status is achieved through formal acts of legislation, inform of resolutions adopted the state governments and approvals/declarations of commitment by the state planning authorities. After all these stages, the aims of the spatial planning laid down in the spatial structure plans are published and become available to the public. It is to be emphasized that the material contents of the aims of spatial planning consist of long-term, supra-sectoral goals that are directed at improving the spatial and settlement structure as well as sectoral spatial structure goals that are intended to create or safeguard the spatial preconditions for implementing the sectoral policies ([Turowski, 2002]).

There are five key planning elements of the spatial structure plans that are derived from the aims of spatial planning and are of conceptual and instrumental importance. These planning elements are zones/land-use categories, central-place systems, axes, functions and planning targets, guide values, target values.

- Zones/land-use categories, with similar structure and intended to pursue similar purposes, include three categories. The first categories are the high density node urban areas characterized by high population density and higher proportion built up areas of the settlement. Secondly, there are the spatial –order zones that are composed of high density are and the outlying areas around the rim and are linked with high levels of commuting between them. Priority is given here to containing urban sprawl, promoting transit ori-

ented settlement along clearly defined development axes and protection of open spaces between the development axes. Third categories include the rural areas comprise all of those areas located outside spatial-order zones and are characterized by the prevalence of a range of development problems. This is particularly true of the so called structurally weak areas which are below the national average in the living standards and are likely to lag behind the rest of the country.

- Central – place system is a key instrument of development and is founded on the principle of hierarchy of settlements which ensures the provision of all the required public and private services as well as employment in all parts of the country. The supply of services is based on the hierarchy of the settlements or “central – places”. There are three levels of central-places: namely; low-order, intermediate-order and high-order centers. The spatial planners, both at the federal and state levels, have catalogs of levels of infrastructure to be provided corresponding to each of the levels ore hierarchy of the central –places. Moreover, these catalogs also serve as a check list for public-sector planning and reference or guide for public and private investment.
- Axis serves as a planning element that is composed two types of axes. The first category is supra-local transport or communication axes which includes a networks of transport and supply infrastructure enhancing exchange of goods, service and people, providing locational advantages along the areas they pass, stimulating development and connecting major agglomerations with peripheral areas. The second category is the settlement axes which are intended to promote linear concentration of settlement development that is accessible with public transport and thereby contribute to the development of the desired settlement structure and preservation of open spaces ([Pahl-Weber and Henckel, 2008], [Turowski, 2002]).
- Functions: These are specific tasks given to the municipalities or regions in accordance with the federal and state – level spatial planning laws governing the territorial and functional division of responsibilities. There are two types of functions. The first category includes functions with spatial dimension, namely: nature protection and the conservation of landscapes, agriculture, forestry, water management, regeneration of the air and the climate, tourism, leisure and recreation and protection of raw-material resources. The second functional categories are the municipal functions which are divided into primary and secondary functions. The key functions are: central-place, industrial and commercial, service, residential, agricultural, tourism and recreational functions.
- Planning targets, guide values and target figures. These are numerical values for a particular planning area expressing the desired or anticipated development of population size, jobs, housing, human settlements and of infrastructure endowment. They provide guidance on common standards to be applied by all public planning agencies and they could either be binding targets, or they may serve simply as guidance for a defined period with certain degree of flexibility ([Commission, 2021]).

III. Regional Planning

Regional planning in Germany is the responsibility of the state (or Land) and is regulated by the Federal and state spatial planning act. It is intermediate tier of planning covering the section of the territories or regions of the state. It lies between the comprehensive spatial planning at the state level and the local or municipal urban land use planning (Turowski, 2002). However, the spatial planning act does not provide a definition of what a “region is” as this is left to each individual states. Moreover, as there is no commonly agreed definition of the region by planning scholars, the definition and delineation of regions is largely left to political decisions.

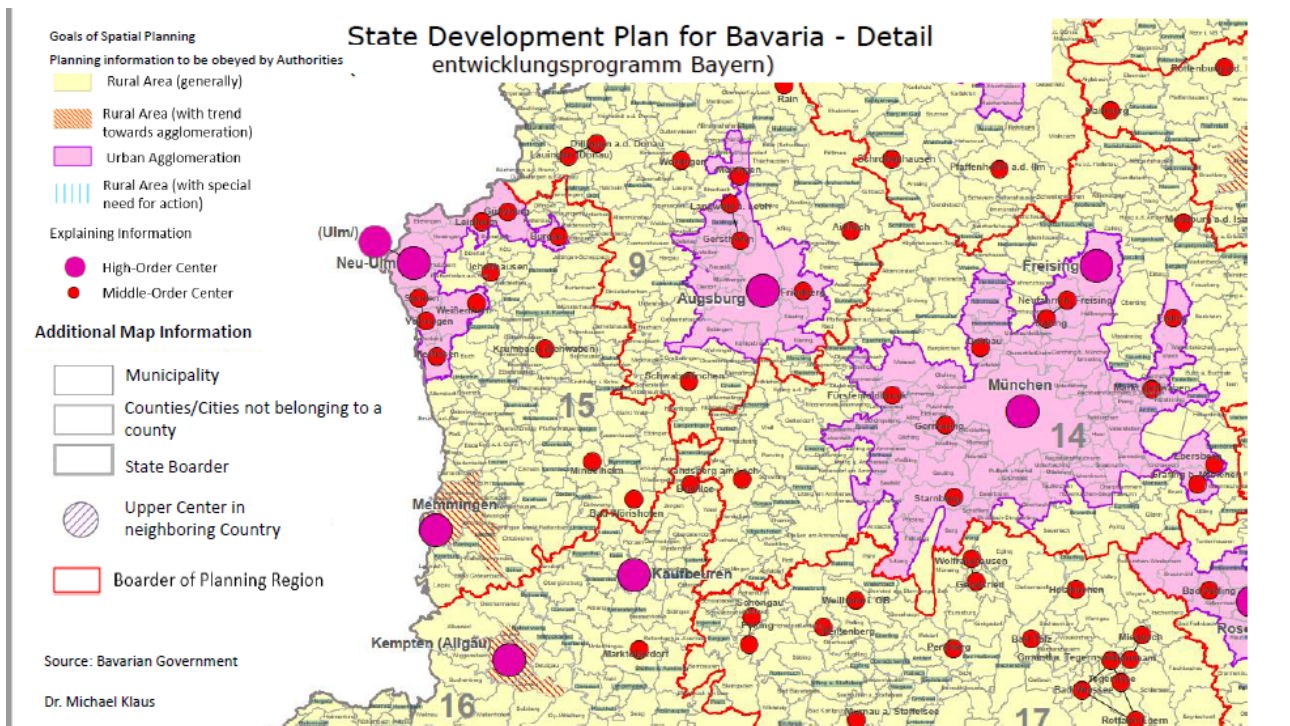


Figure 3: An example of spatial plan at the state level: The example of Bavaria

Regional planning is regional tier of physical planning. It is derived from the respective the spatial structure of the state and is concerned with broad, supra-local and cross-sectoral, fore-sighted planning for the spatial and settlement structural development of a region. The size of the planning regions varies from state to state in Germany and the plans produced are given variety of names: regional plan, regional development plan or area development plan [Pahl-Weber and Henckel, 2008]).

There has been recently an amendment to enable the states to produce a new type of spatial planning at a regional level intended for high density nodes or urban areas (metropolitan areas) characterized by spatial connectedness. The new “regional master plans” incorporate both regional plans and the preparatory land use plan that is specifically produced jointly by the local authorities that fall in the planning region. The regional master plan, as a component of both regional plan and preparatory land use plan, must be consistent with the spatial planning act of the state and the federal building code respectively ([Commission, 2021]). Regional planning, as a part of state-level planning, falls under the state planning function. However, in terms of actual organization and planning policy, it can be implemented jointly by state and local governments. Accordingly, the spatial planning act provides the states two options for the organization and administration of regional planning. Regional planning can be implemented either by regional planning associations that consist of municipalities and counties formed for the purpose of regional planning or by the state planning authorities. In the case of administration of regional planning by the state planning authorities, there exists a formal procedure enabling local authorities to participate in regional planning process ([Commission, 2021]).

Despite the organizational variations in regional planning across Germany, there are core elements that are common to all regional plans in the country. These are territorial matters as well as settlement structure, open space structure and infrastructure. The settlement structure that is to be addressed in regional planning is the designation of central places of different hierarchy that are designed to provide different ranges of services, infrastructure and functions to their catchment areas (the so called “decentralized concentration”) regardless of their level development and allocation of areas for settlement development.

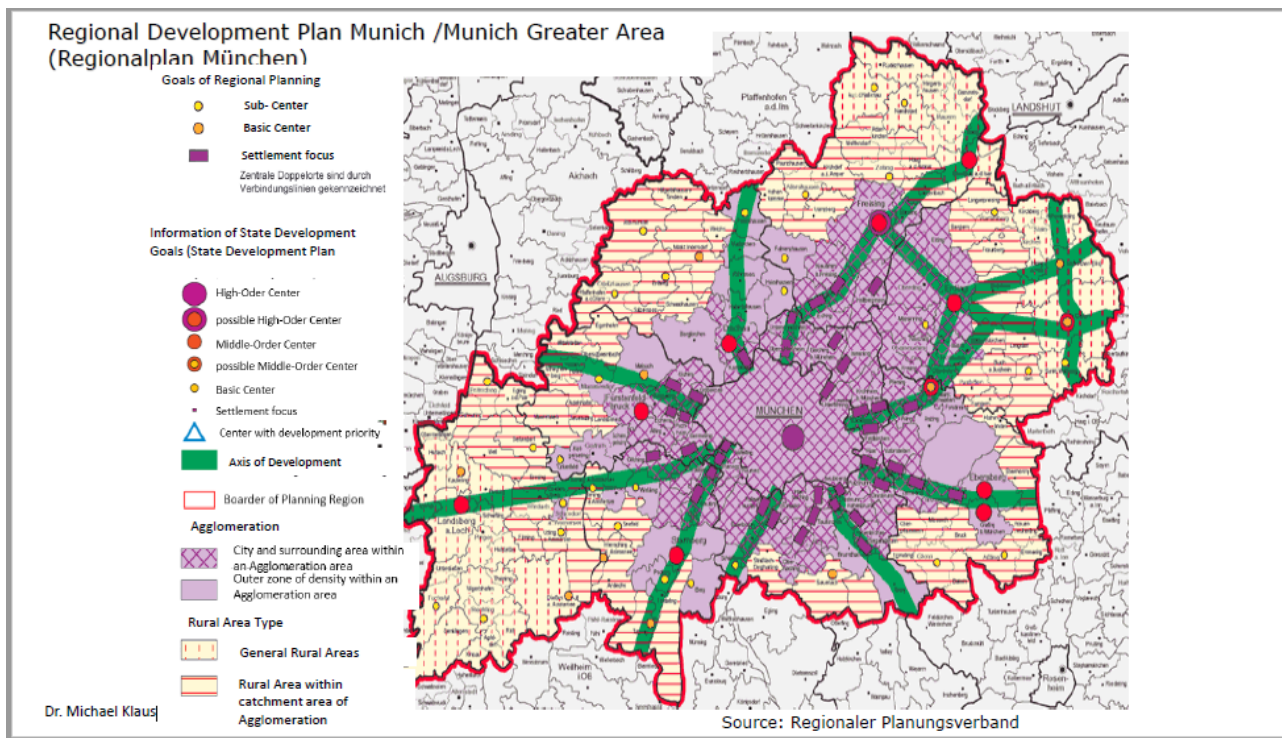


Figure 4: An Example of regional plan: The case of greater area of Munich

The open space structure component of regional planning ensures the provision of “habitat and nature conservation, regional, multifunctional green belts, ventilation corridors, local recreation, as well as areas for flood control and the extraction of near surface mineral resources”. In terms of infrastructure, regional planning allocates sites and routes for transport infrastructure, location and areas for utility services, for freight handling and wind power plants or adopts for the designation of sectoral plans ([Pahl-Weber and Henckel, 2008])

IV. Land-Use Planning

In accordance with the federal building code and autonomy given to the municipalities by the constitution, municipalities are empowered to plan the development their territories through the instrument of urban land use planning. The urban land – use plan must be consistent with the aims of the comprehensive spatial planning set in the state level and regional planning.

Urban land use planning enables the municipalities to prepare and organize the use of plots in the entire municipality for building and other types of uses specified in the federal building code. The urban land use plans should ensure socially equitable use of land for the common good of the community and in line with the principles of sustainable development, contribute to securing an environment fit for human beings and protect and develop the natural foundation of Life ([Turowski, 2002]).

Urban land use planning has the power to assign areas of land for specific uses (such as residential uses, uses for public uses), impose restrictions (such as maximum proportions of plots to be used for construction, maximum number of floors/stories), attach preconditions (such as fixing proportion of dwellings for certain social groups) and setting measures to be taken before certain use is allowed (such as noise insulation) ([Turowski, 2002]).

Urban land – use planning has two stages and hence two instruments. These two planning stages/instruments are the preparatory land-use plan (Flächennutzungsplan – FNP) and the binding land-use plan (Bebauungsplan – B-Plan). The preparatory land-use planning (or zoning plan) is the first stage of urban land-use planning. The plan covers the entire municipal

territory. It is intended to enhance urban development with the municipality while at the same time safeguarding the foreseeable needs of the municipality. Therefore, the plan outlines the use to which land is to be put to meet the current and the foreseeable needs of the community in keeping with the spatial planning and development goals of the municipality. The plan has no direct legal rights but is only binding for public authorities (or the planning authorities) but not to other parties ([Turowski, 2002]).

The binding land-use plan, known as the “local development plan”, is prepared for a section of the municipal territory. It must be developed on the basis of the preparatory land-use plan. The local development plan is adopted by the municipal council in form of by-law and is legally binding not only to public authorities but to other bodies as well. It contains legally binding directives on urban development and structure as well as other related measures, such as land assembly, expropriation and urban redevelopment ([Turowski, 2002]). The two municipal plans are similar in a sense that both adhere to the basic principles of planning and procedures are different in terms of the size of the plan area, the degree of concrete and specific details of the plan contents, legal status and legal effects.

The building code governs the possible planning elements to be included in both the preparatory and bind land – use plans. These are listed in specific sections of the building code ([Pahl-Weber and Henckel, 2008]). Accordingly, the planning elements to be included in the preparatory land – use plan are:

1. The areas designated for development in terms of general types of use, specific types of use and the general density of built use ,
2. Facilities and infrastructure for the public and private provision of goods and services, in particular public amenities and facilities serving the community such as schools, churches, and health, cultural, and social facilities,
3. Land for supra-local and local transport
4. Land for utilities,
5. Green and open spaces, sports and recreation areas,
6. Areas where uses are restricted on environmental protection grounds,
7. Water bodies, ports and harbors, as well as areas for water management, flood control, and drainage,
8. Areas for filling, excavation, and the extraction of mineral resources,
9. Agricultural land, forest and woodland areas,
10. Areas for measures to protect, preserve, and develop the natural environment and landscape.

On the other hand, the binding land-use plan determines:

1. Category and intensity of built use,
2. The type of development, lot coverage, and positioning of physical structures,
3. Land for ancillary structures,
4. Traffic areas and special purpose traffic areas,
5. Service areas,
6. Areas for waste disposal and drainage, including the retention and seepage of rainwater,
7. Public and private green spaces,

Legally Binding Land Use Plan

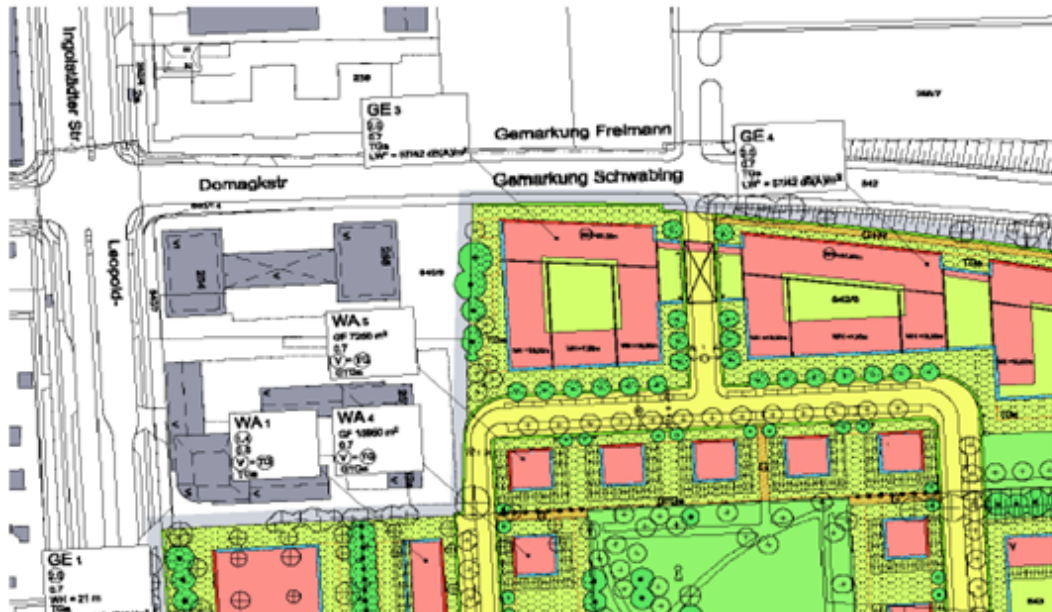


Figure 5: Legally binding land use plan: An example

8. Water bodies,
9. Agricultural and forest areas,
10. Incineration bans and the use of renewable energies,
11. Protected areas and pollution control,
12. Planting and care of trees, shrubs and greenery of any other kind,
13. The setting of time-limits and conditions for designations on special urban development grounds.

The descriptions of the preparatory land-use plan and the designations of the binding land use plan can be given in graphic or textual form which is specified in the “Plan Notation Ordinance”, which applies throughout Germany. The ordinance lays down the details for graphic representation and designation. The following maps show the planning elements generally addressed in preparatory land-use plan (Flächennutzungsplan – FNP) and the binding land-use plan (Bebauungsplan – B-Plan).

8 Challenges, Opportunities and Key Messages

8.1 Common Challenges in Land Use and Spatial Planning

Urban Sprawl: Urban sprawl refers to the uncontrolled expansion of urban areas into rural or undeveloped land. It often results in inefficient land use, increased reliance on automobiles, and the loss of natural habitats and agricultural land. Sprawl can lead to higher infrastructure costs, traffic congestion, and environmental degradation ([Ewing and Hamidi, 2015]).

Environmental Degradation: Development activities, if not properly managed, can lead to environmental degradation, including deforestation, soil erosion, water pollution, and loss of biodiversity. Planners must balance development needs with environmental conservation to protect natural resources and ecosystems ([Foley et al., 2005]). **Resource Management:** Effective resource management is crucial for sustainable development. Planners need to ensure the efficient use of land, water, energy, and other resources while minimizing waste and reducing environmental impacts. Challenges include managing scarce resources, addressing climate change, and promoting renewable energy ([Gleick, 2003]).

8.2 Opportunities and Trends in Spatial and Land Use Planning

Smart Cities The concept of smart cities involves using technology and data to improve urban living. Smart cities integrate digital infrastructure, sensor networks, and data analytics to enhance urban services, optimize resource use, and improve quality of life ([Anthopoulos et al., 2017]). Practical measures in initiating and promoting smart transportation systems, energy-efficient buildings, and responsive public services in Ethiopia serve as opportunities to advance sustainable land use and planning.

Green Infrastructure Green infrastructure refers to the integration of natural systems into urban areas to provide environmental, social, and economic benefits. Examples include green roofs, urban forests, permeable pavements, and wetlands. Green infrastructure can improve air and water quality, reduce urban heat islands, and enhance biodiversity ([Benedict et al., 2012]).

Integrated Transport Planning Integrated transport planning involves coordinating land use and transportation to create efficient and sustainable mobility systems. This approach aims to reduce traffic congestion, promote public transit, and encourage active transportation modes like walking and cycling. Opportunities include transit-oriented development (TOD) and multimodal trans-

portation networks ([Cervero and Kockelman, 1997]).

Innovative Planning Solutions

I. Renewable Energy Integration

Incorporating renewable energy sources, such as solar, wind, and geothermal, into urban planning can reduce greenhouse gas emissions and promote energy sustainability. Planners can design communities that integrate renewable energy technologies, encourage energy-efficient buildings, and support decentralized energy systems ([Lund, 2007]).

II. Resilient Cities

Building resilience in cities involves designing urban areas to withstand and recover from adverse events, such as natural disasters and climate change. Resilient cities incorporate adaptive infrastructure, disaster preparedness, and climate mitigation measures to enhance their ability to cope with shocks and stresses ([Meerow et al., 2016]).

III. Participatory Planning and Social Equity

Engaging communities in the planning process and promoting social equity are essential for creating inclusive and just urban environments. Participatory planning ensures that diverse voices are heard, and planning decisions reflect the needs of all residents, particularly marginalized groups ([Fainstein, 2014]).

8.3 Key Messages for Future Land Use and Spatial Planning

Promote Integrated Planning Approaches: Encourage the integration of land use, transportation, housing, and environmental policies to create cohesive and comprehensive development strategies.

Stakeholder Participation: Foster greater involvement of stakeholders and the community in the planning process to ensure that decisions reflect local needs and aspirations.

Align with Sustainability Goals: Align planning practices with international sustainability goals, such as the SDGs and the Paris Agreement, to promote sustainable and resilient development.

Adopt Innovative Solutions: Embrace innovative planning solutions, such as smart city technologies, green infrastructure, and renewable energy integration, to address contemporary challenges and enhance urban livability.

Focus on Resilience: Incorporate resilience principles into planning to ensure that cities and regions can withstand and recover from adverse events, such as natural disasters and climate change.

Promote Equity and Inclusion: Ensure that planning processes and outcomes promote social equity and inclusion, addressing the needs of marginalized and vulnerable populations.

Encourage Knowledge Sharing: Facilitate the exchange of knowledge, best practices, and lessons learned between regions and countries to enhance planning expertise and innovation.

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