

LAND USE PLANNING

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SUMMARY

Competition for land is increasing as demand for multiple land uses and ecosystem services rises. Food security issues, renewable energy and emerging carbon markets are creating pressures for the conversion of agricultural land to other uses, such as reforestation and biofuels. This is occurring in parallel with other growing demands from land systems for urbanization and recreation, mining, food production, and biodiversity conservation. Managing increasing competition for the supply of these services, accounting for different stakeholders' interests, requires efficient allocation of land resources. Land use planning can be of use with regard to finding a balance among competing and sometimes contradictory uses [3], while promoting sustainable land use options. This brief presents evidence of land use planning, spatial planning, territorial (or regional) planning, and ecosystem-based or environmental land use planning as tools that can strengthen land governance, improve economic opportunities based on sustainable management of land resources, and develop land use options that reconcile conservation and development objectives.

Contributions of land use and spatial planning for supporting sustainable land use and management

Case studies analyzed show that spatial and land use planning can contribute to sustainable land management (SLM) through [6-8]:

- protecting land of agricultural significance from urban and peri-urban encroachment;
- protecting natural capital from urban and peri-urban encroachment;
- preventing or limiting exposure of saline and acid sulphate soils;
- rehabilitation, and/or avoidance of contaminated sites;
- adaptation to salinization and rising groundwater levels;
- ensuring land use reflects land capability;
- protection of the quality and quantity of ground water supply sources;
- protection of water quality and minimization of erosion through water-sensitive urban design;
- minimizing eutrophication and other pollution of surface and groundwater;

- establishing appropriate buffers between development, and coastal estuaries, and water foreshores;
- floodplain management;
- preventing or limiting vegetation clearing;
- protecting natural habitat from destruction and fragmentation;
- preservation and enhancement of ecological corridors;
- reducing car dependence by transport demand management;
- accounting for sea-level rise and increased storm surge, arising from coastal development.

In areas of communal land tenure, land use planning assists in the sustainable management of rangelands, inter alia, resolving issues related to competing land uses and land tenure conflicts.

Policy messages:

- **Comprehensive land use planning is an instrument** for sustainable land management, concurrently advancing sustainable development[1]; it creates the preconditions required to achieve a type of land use that is environmentally sustainable, socially just and desirable, as well as economically sound.[3].
- Land use planning is centered around a participatory definition of future land uses; it is, therefore, a useful approach whenever **natural resources and biodiversity are to be protected and rehabilitated**, and unexplored land use potential has to be identified and evaluated.
- Land-use and spatial planning can: a) reconcile land use with environmental concerns and resolve **potential conflicts between sectoral interests** and potential uses[9]; b) increase **land tenure security** and clarify customary land tenure of communal lands.
- Policy responses to coordinate human activities with environmental conservation - alongside **suitable financial, legal and technical support** - are needed to guide land use planning to support sustainable land management, and to help resolve conflicting land use demands.
- Land use planning should be approached from both land cover and **land functionality** perspectives, as the latter is a nexus to other transversal land issues.
- The integration of cross-sectoral policies (e.g., land use, energy and water management) into a **single planning instrument at the regional level**, based on an understanding of territorial dynamics, can bolster sustainable land management.
- Planning at the regional scale enables the **cumulative impacts of future development** on the natural capital of a region to be accounted for, and the sharing of responsibility for protection and management across a wider number of stakeholders.

KEY DEFINITIONS

Best practice: a procedure that has been shown by research and experience to produce optimal results and that is established or proposed as a standard suitable for widespread adoption¹

Ecosystem restoration: the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed [10]

Land use planning: the systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to select and adopt the best land use options. Its purpose is to select and put into practice those land uses that will best meet the needs of the people while safeguarding resources for the future.

See Table 1 for:

Ecological land use planning;

Integrated land use planning;

Participatory land use planning;

Regional land use planning;

Rural territorial land use planning; and

Spatial land use planning.

Multifunctional landscapes: landscapes which serve different functions and combine a variety of qualities (i.e., different material, mental, and social processes in nature and society occur simultaneously in any given landscape and interact accordingly); ecological, economic, cultural, historical, and aesthetic functions co-exist in a multifunctional landscape [9].

Peri-urban zone: area between an urban settlement and its rural hinterland. Larger peri-urban zones can include towns and villages within an urban agglomeration. Such areas are often fast changing, with complex patterns of land use and landscape, fragmented between local or regional boundaries. [11]

Policy: A course or principle of action adopted or proposed by an organization or individual². Strategies provide a means to implement policies. Actions describe specific elements within a strategy.

Sustainable land use: the use of components of biological diversity in a way, and at a rate, that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.

Sustainable land management (SLM): adoption of land use systems that, through appropriate management practices, enable land users to maximize the economic and social benefits of land, while maintaining or enhancing the ecological support functions of its resources (soil, water, vegetation and animal resources) [12]. SLM combines technologies, policies, and activities aimed at integrating socio-economic principles with environmental concerns, so as to simultaneously maintain or enhance production, protect the potential of natural resources and prevent (or halt) soil, vegetation and water degradation, while being economically viable and socially acceptable [13].

1. INTRODUCTION

Competition for land is increasing as demand for multiple land uses and ecosystem services rises. Food security issues, renewable energy and emerging carbon markets are creating price signals for the conversion of agricultural land to other uses, such as reforestation and biofuels. This is occurring in parallel with other growing demands from land systems for urbanization and amenities, mining, food production, and biodiversity conservation. While land use change may increase the supply of some ecosystem services, trade-offs may occur with other services. Managing increasing competition for the supply of these services, as well as different stakeholders' interests, requires land use planning for efficient land allocation that promotes sustainable land use options [14], and that aids in finding a balance among competing and sometimes contradictory uses [3].

This background paper analyzes the role of land use and spatial planning tools, processes and approaches to improve socio-economic opportunities through sustainable management of land resources (i.e., soil, water, and biodiversity). Section 1 explores the nexus between land use planning and changes in the land system, as well as interdependent factors which influence land use planning. Section 2 briefly describes the evolution of different land use types over time, and the basic requirements of land use planning. Principles of best practice in land use planning for sustainable land use and management are identified, and case studies of land use policy, built upon these principles, are presented in Section 3. The final section presents evidence of contributions of land use and spatial planning to sustainable land use and management, as well as to the improvement of economic opportunities and the strengthening of land governance. The paper concludes by highlighting some of the challenges spatial and land use planning instruments face in their application for sustainable land use and management and coherent territorial development.

¹ Best Practice. Merriam-Webster.com. Merriam-Webster, n.d. Web. 14 Dec. 2016.

² Oxford dictionary

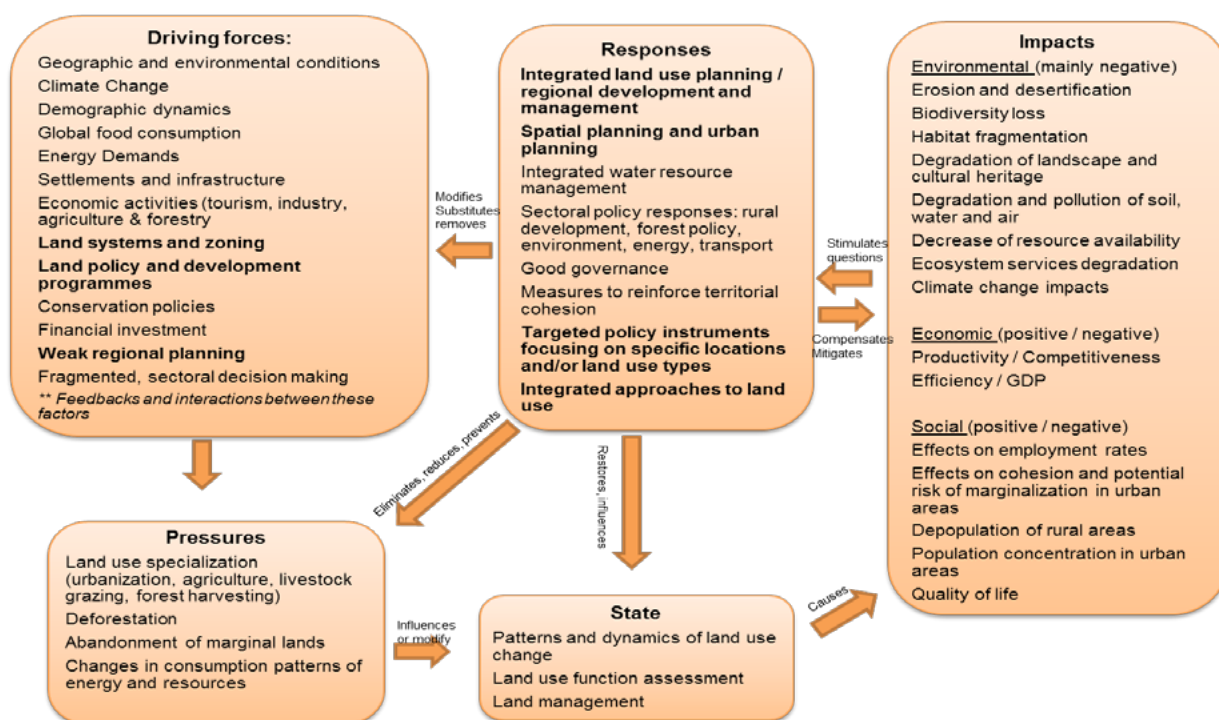
1.1 Land use planning – a contribution to sustainable land management (SLM)

Sustainable land management (SLM) encompasses the ecological, economic and socio-cultural dimensions of sustainable development [15]; as a process, it comprises land use planning, land use design and land development [3]. Technologies for the adoption, spread, adaptation and implementation of SLM practices rely on approaches that enable and empower people to this end; land use planning has proven to be such an approach [14]. Land use planning, spatial planning, territorial (or regional) planning, and, more recently, ecosystem-based or environmental land use planning (Table 1) foster sustainable land use and management; this occurs via the acknowledgments of stakeholders, their differing objectives, and the need to strike a balance among the diverse, and often conflicting, interests of these actors. An aspiration of land use planning is to coordinate current and future societal needs, while minimizing conflicts [16].

1.2 The nexus between land use planning and changes in the land system

Land development deals with land use change. The assessment of the driving forces behind land use and land use change is necessary when analyzing and explaining past patterns, as well as when aiming to forecast future patterns. Figure 1 summarizes the drivers and pressures of land use change, and their underpinning of the need for planning. Urbanization, agricultural intensification, and land use specialization are processes resulting from the interaction of driving forces related to geographical characteristics, population dynamics, economic growth, the political environment, and strategies and policies at different levels.

Figure 1: Drivers and pressures of land use change; their underpinning of the need for planning, and planning as a response. Adapted from [1]



Land use planning influences the state of the environment (Figure 1); its implementation may have positive as well as negative effects on the environment. For example, Jia et al. (2003) argue that much of the environmental degradation occurring in China is closely connected to the ways in which land is used [17].

Planning systems and the practice of zoning are both *driving forces* of change, as well as *responses* to it. Such practices can promote environmentally sound land use and management options, resulting in a number of positive consequences, such as: tackling land degradation, effecting ecosystem rehabilitation and/or restoration, resolving conflicting land use demands, and ensuring territorial cohesion towards sustainability. Policy responses related to spatial planning, transport, integrated coastal zone management, and integrated water resource management directly affect the use of land, and land use change. Likewise, changes in land use can be indirectly effected by policy instruments, such as taxation and incentives, climate change adaptation and mitigation strategies, strategies for sustainable development, and territorial agendas [2].

1.3 Land use, land governance and land tenure: interdependent factors influencing land use planning

Weak governance is a major constraint with regard to planning for sustainable development; it underpins land degradation and can exacerbate conflicts over the use of land (Box 1). Many examples exist of national norms that have failed to protect valuable ecosystems from clearance, partly because they failed to align with land use planning and governance efforts [18].

Box 1: Example of the impact of governance and lack of land use planning on rangelands, leading to degradation

Pastoral areas of Ethiopia are characterized by low, variable and unpredictable rainfall, with rangelands made up of patchily distributed resources of high and low production potential. The absence of a spatial planning framework has led to haphazard, and often contradictory, government-led pastoral land use planning; decisions made at different government levels often occur without consultation across and between levels, and rarely involve local land users. This has led to *conflicts in the use of the land, pressure on local water resources, and changes of land use that have wide-ranging and long-term negative consequences*. The previously highly-productive rangelands are being increasingly fragmented. Livestock routes are similarly increasingly blocked due to unplanned settlements, fenced enclosures/exclosures, and agricultural areas along rivers. Local land use plans have not been included within local government development plans.

In 2013, the government of Ethiopia initiated the design and implementation of a national land use planning policy. A village (*kebele*) level implementation – the lowest government administrative level – was chosen, but it soon became clear that a different approach was required to reflect the inherent variability in scale and units of planning, ecology, and land uses. The government then initiated a complementary participatory, community-led land use planning process. This was implemented at a district level and tailored to the socio-political (communal land tenure, nested governance), economic and cultural context of pastoralists and their traditional use of the land, in which the movement of people and livestock is key to a healthy and productive pastoral system.

Source: [19]

- Land use planning that strengthens land governance requires processes that: are clear – with specific objectives for the protection of natural resources (specific outcomes), – and with emphasis and focus *on comprehensive* natural resource planning;
- include *spatial tracking* and evaluation of the type of land lost to development (e.g., forest, farmland) so as to better differentiate between planned and unplanned losses, both within and outside urban growth boundaries;
- include a system for the tracking and evaluation of the *quality of land* lost to development, based on soils and other topographic information;
- use *spatial land use data* to examine both the effects of development on forestry and farming viability, and related mitigation effects resulting from land use planning;
- analyze quality-of-life factors (i.e., beyond economic aspects) that the planning programme influences by means of land conservation [20].

Good governance structures foster responsible land use management through, for instance, the coordination of sectoral policies and interests. Strengthening land governance can, thus, deliver multiple positive outcomes, including improvements in the food economy, environmental benefits, and security and peace. Published accounts of strengthening local-level governance, in a wide array of places, show common elements that can be adapted to different political and cultural contexts [21]. Land ownership is another factor affecting land use planning (see Box 2, below). Each chosen use of land may pre-determine who the potential users will be; this is influenced, in turn, by the existing type of land tenure or property regime. Conflicts can arise when two or more tenure systems coexist, as occurs in Ethiopia, for instance, where individual land holdings are common in the crop-farming areas of the highlands, while communal land tenure dominates lowland pastoral areas (see Box 1, above).

Box 2: Land tenure issues relevant for land use planning:

- Existing private, public and common land rights, their boundaries and overlaps;
- Existing private, public and common rights over natural resources, such as water, minerals, and forests;
- Local people's land/resource rights (e.g., indigenous land tenure, customary land tenure, religious land tenure, or other informal land tenure arrangements);
- Existing secondary rights, such as right of way, access to water ponds or woods;
- Administrative boundaries;
- Clarification regarding the responsibility for natural resource management between the state and local communities.

Source [3]

2. PLANNING: DEFINITIONS AND EVOLUTION IN THE CONTEXT OF SLM

2.1 Definition

Planning is contained within, and constrained by, economic and political forces, and priorities [22]. The *process* of land use planning, and its implementation, hinge on three elements: the stakeholders involved in, or affected by, the land units managed; the qualities or limitations of each component of the land units being planned for; and the consideration of available, viable land use options. From a *technical* perspective, factors of planning are: amount of land available, and its system of tenure; quality, potential productivity and suitability of land (i.e., environmentally sound land use); level of technology used to exploit the land resources; demographic conditions, and the needs and living standards of the affected people. Each of these factors interacts with the others [23].

The land use planning *process* can serve to screen preliminary land use options that should be considered for land evaluation, a process useful for setting national priorities for development, as well as for selecting specific projects for implementation at local or sub-national levels [24]. Land use planning has become a central prerequisite for (spatial) development that aims at social, ecological and economic sustainability. To meet this challenge, different types of land use planning exist, as described hereafter.

2.2 Types of land use planning

Land use planning (LUP) has evolved from a top-down, expert-driven approach, to one of land suitability, in the 1960s and 1970s. From the 1980s onwards, this shifted towards a more integrated approach, involving planning experts, decision-makers, and ordinary citizens [25]; an approach integrated into national institutions, as well as increasingly linked to financial planning. Moreover, the traditional concept has diversified over time, to include the appraisal of factors related to sustainability (i.e., social acceptance, economic viability, physical suitability, and environmental sustainability), as well as social impacts (i.e., access to land resources, nutritional status, health status, and education). In this way, related concepts of integrated LUP, spatial LUP, participatory LUP, participatory rural planning, territorial ecological planning, ecosystem-based LUP (Table 1) originated from the 1980s onwards. This transition parallels the shifting attitudes of the time regarding humankind's relationship with land. In the 1700s, land equated 'wealth'; it was later understood through the more comprehensive concept of 'commodity'; this shifted again to that of 'scarce resource'; from the 1980s onwards, it was generally viewed as a 'scarce community resource', representing both a commodity, and wealth). This background paper considers spatial planning as a sub-set of LUP.

Figure 2: Land Use Planning and Spatial Land Use Planning as a sub-set



Table 1: Land Use Planning and its variants, including Spatial Land Use Planning.

Name	Definition / purpose	Examples of application
Land use planning	The systematic assessment of land and water potential, alternatives for land use and economic and social conditions, in order to select and adopt the best land use options. Its purpose is to select and put into practice those land uses that will best meet the needs of the people while safeguarding resources for the future. [26]	Extensive application for rural, regional, local land use planning in developing and developed countries.
Spatial land use planning	Regional/spatial LUP gives geographical expression to the economic, social, cultural and ecological policies of society. It is, at the same time, a scientific discipline, an administrative technique and a policy developed as an interdisciplinary and comprehensive approach directed towards balanced regional development, and the physical organization of space, according to an overall strategy.	CEMAT European Conference of Ministers Responsible for Regional Planning [27] Torremolinos charter
Integrated land use planning	Assesses and assigns the use of resources, taking into account different uses, and demands from different users, including all agricultural sectors - pastoral, crop and forests - as well as industry and other interested parties. [12, 23, 28, 29]	Regional agricultural development of Bungoma region, Kenya [23], rural planning in Laos [30]; Land Use and Water Allocation on a Watershed Scale in Iran [31]; Land use and transportation planning, Jinan, China [32]; risk sensitive land use planning: case studies of Nepal, Spain and Vietnam. [14, 33]

Name	Definition / purpose	Examples of application
Participatory land use planning (PLUP)	Used for planning of communal or common property land, important in many communities where communal lands are the most seriously degraded, and where conflicts over land use rights exist [12, 34]. Arrangements can be regulated through negotiation among stakeholders, and communally binding rules for SLM, based on planning units. Social units (e.g., village) or geographical units (e.g., watershed) can be adopted. People-centered, bottom-up approach recognizing differences that exist from place to place, with respect to socio-cultural, economic, technological and environmental conditions.[3]	Laos (Luang Prabang Province) [25, 34, 35]; Loess Plateau in Northern China – EROCHINA project [36]; China [3]; Costa Rica [37]; rangelands in northern Tanzania [38]; Reunion Island: to integrate biodiversity into land use planning [39]; US – South Florida: urban planning [40]; Namibia; Oromia (Ethiopia).
Gestion des terroirs (Village land use planning)	A participatory catchment approach; it associates groups and communities with a traditionally recognized land area, aiding these communities in building skills and developing local institutions for the implementation of sustainable management plans. It has focused on natural resource management at the village or community level through: (1) technical projects, such as those related to the conservation of soil, etc; (2) socio-economic factors related to the organizational structures within which people arrange their livelihood strategies; and (3) the legal system and its administration, by which use rights are enforced in practice.[12]	Francophone West Africa. [12]
Ordenamiento territorial rural (Rural territorial land planning)	A politico-administrative and technical process aimed at organizing, planning and managing the use and occupation of the territory, contingent to its biophysical, cultural, socio-economic, socio-political and institutional characteristics. This process should be participatory, interactive and based on explicit goals that promote wise and fair land use, taking advantage of opportunities, reducing risks, and protecting resources in the short, medium and long term. It should also aim at a rational distribution of costs and benefits of territorial use amongst its users.[41]	Argentina and several Spanish-speaking countries of Latin America [41]
Regional land use planning	A process of territorial development designed to facilitate the elaboration of a general spatial concept and land use priorities, determination of environment and monument protection conditions, formation of a system of residential, productive and infrastructural areas, regulation of employment of the population, while reserving the territories requisite for the activity expansion of private and legal entities. Comprehensive land use planning is regarded as its main constituent. Integral planning is used to determine policies of spatial development of a given territory, priorities of territory use, protection and basic principles of management [42]	Lithuania, European Union, Canada [43]; Australia.
Ecological land use planning (Ordenamiento territorial ecológico)	An environmental policy instrument to regulate land use and productive activities, to protect the environment, promote the conservation and sustainable use of natural resources, considering land use potential and land degradation trends. It is considered the most appropriate policy instrument to harmonize human activities and environmental sustainability in the short, medium and long term[44].	Mexico [45]; Argentina, Costa Rica and Chile have developed methodological frameworks that include ecosystem services within spatial LUP [46]. A tool for rural LUP, combining strategic environmental assessment and valuation of ecosystem services has been applied in the Southeast Pampas Region of Argentina [47].

Land use planning can be improved if the value of the spatial relationships between land uses can be computed with sufficient ease [48]. The **spatial aspect** of planning (or spatial planning) was apparently embedded within the traditional concept of LUP, up until the modernist period in planning (i.e., 1970s-1980s) when it drew considerable attention, shifting from a product-oriented (master plan) to a process-oriented activity [49]. In terms of coverage of issues and scale of operation, spatial planning is a more integrated concept; equally, it is an activity that may change in form in different contexts, depending on the institutional and legal framework, or variations in planning cultures and traditions [50].

Spatial planning is linked to the economic development of countries. It facilitates infrastructure planning, especially transportation planning, to determine land use in managing urban regions [49]; it is a culture- and context-influenced process of determining the use of space for sustainable land use and management. Its adoption has facilitated a change regarding the emphasis governments place upon, and the way in which they think about, the role of planning. This form of planning relates also to aspects such as supporting and managing economic growth, improving quality of life through a better understanding of the dynamics of development, and better comprehending where and when development occurs, as illustrated in several case studies of Section 3. Spatial planning illustrates that planning can be more than the traditional regulatory and zoning practices of land use [51].

Depending on the conditions in which it is implemented, LUP can be more or less complex, ranging from the simple inclusion of spatial aspects into local development planning, to comprehensive spatial planning approaches at different administrative levels [3]. Regional differences in planning can be significant too, as shown in Table 1, and in the case study of the European Union (Annex 2.4). **Spatial planning** is increasingly oriented towards being an instrument and/or process for resolving conflicting demands on space; it is a means of looking at the spatial dimension of strategic policies, with the objective of integrating and coordinating all space-consuming activities within a single geographic territory [49].

Whether considering traditional LUP, or variations such as spatial planning (Table 1), the challenge for LUP is to ensure the efficient use of limited land resources, and to contribute to sustainable economic development (at the regional, national, and local levels), as well as to safeguard the balanced use of resources (e.g., soil, water and biodiversity) [52].

2.3 Land use planning approaches: basic requirements

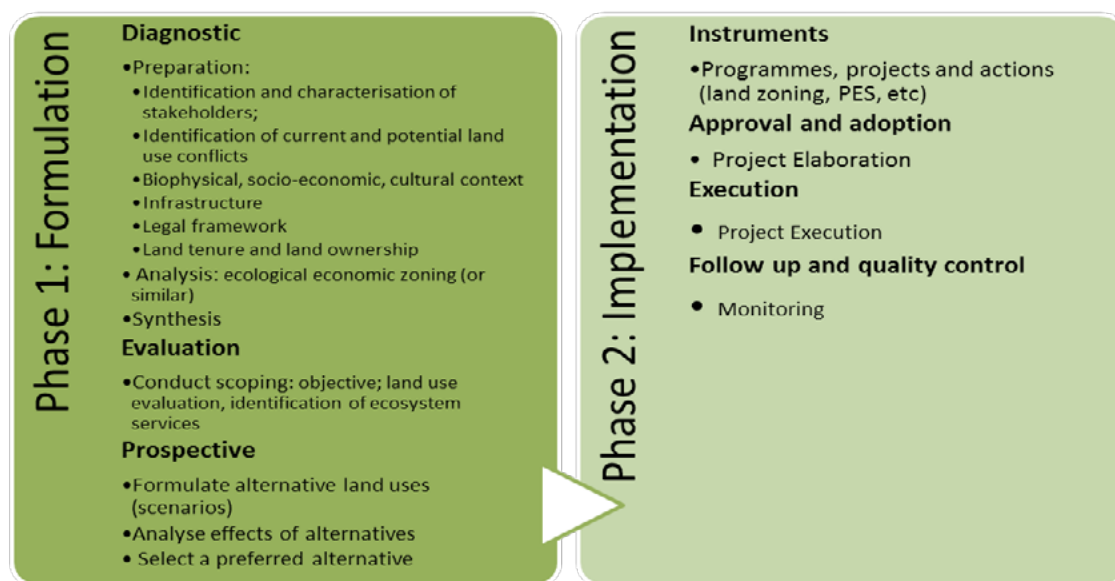
Land use planning approaches need to be flexible and adaptive so as to be able suit varying circumstances. In other words, “blueprint approaches” that define the steps, procedures and tools do not function, rather, LUP must be structured as a process designed according to the needs, demands, capacities, rules and institutional structures of the place in question, following the principles described in Section 3 [3].

There are two main phases to LUP and processes - i.e., formulation and implementation - each comprising a range of activities. The formulation of a land use plan requires a broad assessment of current land uses, as well as main limitations, and opportunities for development. This assessment requires the collection and analysis of a substantial amount of information including: biophysical information, infrastructure, population, land ownership, land tenure and legal context. Tools such as ecological and economic zoning (EEZ) of the Food and Agriculture Organization (FAO), land evaluation, and land suitability analysis are commonly applied. It is also at this stage that valuation of ecosystem services for inclusion in land use plans can be undertaken [53]. Once the assessment is complete, a scoping study into public opinion and social impacts also needs to be carried out, via participatory planning processes [54].

Using this information, different land use scenarios can be developed and the best option selected, taking into account criteria of sustainable land use. This can be challenging as the most suitable scenario may not always be the most profitable one (e.g., Suheadi and Metternicht [55] provided a list of alternative land use options, each addressing environmental and economic objectives to differing extents, in a rural area of Indonesia). In some cases, social dynamics could be drastically affected if an activity, such as pastoralism, were to be impacted (e.g., Ethiopia pastoral rangeland management; see Box 1). Integrated environmental-economic systems that model land use futures can be used to consider multiple objectives simultaneously, enabling the identification of efficient land use arrangements (e.g., meeting society's preferences for ecosystem services provision). This was undertaken, recently, in Australia, to identify efficient land use arrangements that anticipate future demand for land-sector greenhouse gas emissions abatement, and manage requisite trade-offs between agriculture, water and biodiversity [14].

After the land use zoning plan, or spatial plan, is elaborated, instruments have to be identified with which to develop specific programmes and initiatives to achieve the desired results (e.g., payment for ecosystem services; market-based instruments, policy mixes, land zoning). This needs to be carried out within a clearly defined framework, including mechanisms to plan and monitor implementation, identify and correct mistakes, and improve the ongoing process [41, 54].

Figure 3: Steps of the Land Use Planning Process



3. PRINCIPLES OF BEST PRACTICE IN LAND USE PLANNING FOR SLM

Unpacking the different aspects of SLM (i.e., maximizing economic and social benefits, and maintaining or enhancing the ecological support functions of land resources), requires LUP processes that:

1. Have purpose: a clear formulation of the objective and problem to be solved (i.e., LUP as a demand-driven process)[56];
2. Recognize stakeholders and their differing objectives (e.g., competition for resources and land uses) [25];
3. Are integrated and participatory, promoting multi-sectoral coordination and multi-stakeholder engagement [12] [57], as well as fair representation and effective participation of stakeholders in negotiations [56];
4. Consider the socio-political and legal contexts, including land tenure systems[25, 35, 41];
5. Develop consistent plans and policies at all levels of decision-making, and link effective institutions at local, sub-national, and national levels [56];
6. Develop sets of planning procedures that are applicable at different scales (e.g., land evaluation, participatory

techniques, analysis of stakeholder objectives, monitoring and evaluation) [56];

7. Promote vertical integration: provide outputs (e.g., land use and management options) that are legitimate at national and local scales [58];
8. Have an accessible and efficient knowledge base;
9. Consider multi-functionality of the land[59] [60] and the 'landscape'³ as the basic planning and management unit [41].

Through its development cooperation work, both in developing countries and in countries whose economies are in transition, the German Corporation for International Cooperation (i.e. GIZ) [3] recognizes that best practices of LUP should aim at sustainability balancing social, economic and environmental needs, following the application of the principles highlighted in Box 3, below.

³ Landscape can be: rural, urban, or peri-urban. Ecosystem services are provided at the landscape level, and landscape represents the environment where spatial patterns influence ecological processes (61. Wiens, J.A. and M.R. Moss, Issues in landscape ecology. 1999: International Association for Landscape Ecology).

Box 3: Principles of leading LUP practices

LUP ought, ideally, to:

- be integrated into state institutions, with an official mandate for intersectoral planning; be inclusive, based on stakeholder differentiation and gender sensitivity;
- integrate bottom-up aspects with top-down aspects ("vertical integration");
- be based upon inter-disciplinary cooperation, with sector coordination ("horizontal integration");
- promote civic engagement and transparency;
- consider and value local knowledge, and traditional strategies for solving problems and conflicts;
- apply methodology and contents (e.g., specificity, form of participation, and technology) that are scale-dependent (village, municipality and region);
- relate to spaces and places ("spatial orientation");
- be linked to financial planning;
- follow the idea of subsidiarity;
- result in a legally binding land use plan;
- be future-oriented ("visionary");
- be implementation-oriented, realistic and adapted to local conditions; and, lead to an improvement in the capacity of stakeholders.

Source: [3]

The afore listed principles define best LUP practices and policies, and have been used to identify case studies of LUP that promote sustainable land use options and management. These are presented in Section 3.7, and Annex 2.

The significance, within LUP, of a number of factors is briefly discussed in the forthcoming subsections. These factors include: the socio-political and legal contexts; multi-stakeholder engagement; multi-sectoral coordination; scale; multi-functionality of land; and landscape-based approaches in LUP processes.

3.1 Socio-political and legal contexts

An adequate legal framework, with strong political and institutional capacity to integrate LUP tools into national planning, is crucial to enhance land use policy and achieve good results. Box 4 illustrates the significant role that socio-political and legal contexts play in planning for the use of land at the country level.

Box 4: Socio-political and legal contexts enabling LUP: evidence from Latin America

Colombia is a case in point of an enabling political environment for LUP. In the early 1950s a law required district governments to implement urban planning, and, in 1991, the country established LUP in its political constitution (*article 288: ordenamiento territorial*, that became *Ley Organica Territorial*, in 2011). By 2007, 96.9% of municipalities had invested in land risk management plans, with a Land Planning Commission to monitor the process, established in 2008. Brazil, meanwhile, implemented land use and spatial planning using ecological economic zoning and agro-ecological zoning (EEZ and AEZ). This began in the Brazilian Legal Amazon, as a land planning instrument to support economic development, while simultaneously accounting for environmental issues. It was then incorporated into the National Environmental Policy, established in 2002. It was henceforth also seen as a regional planning tool, to be used in a dynamic and continuous process of LUP, as well as the spatial expression of economic, social, cultural and ecological policies as per national, regional and local priorities. EEZ is based on *integrated decentralization* of the federal government and it promotes effective participation of states and municipalities in planning and implementation processes (i.e., vertical integration). This approach has fed a growing political recognition of the need to involve key stakeholders in the decision-making process. Peru's experience illustrates the political challenges of LUP. Almost all regions demonstrated political will to begin a LUP process, but by 2010 only 35% of regional governments had actually carried out EEZ. Some districts (13.7%) developed LUP *instruments*, though the overall process has been highly disorganized and not all the stages of LUP have been completed. Recently, the Peruvian government has decided to *recentralize* the LUP process so as to establish a dialogue with the private sector, which opposes EEZ, considering it to be too restrictive for new private investments. This appears to be an unfortunate development, since the decentralized approach appears to yield better overall results. Chile meanwhile, began with a *centralized approach*, focused solely on urban areas. However this model did not satisfy the government's expectations, so, in 2011, the country shifted to *decentralized* LUP, through the implementation of regional land use plans, albeit with close support from the central government. In 2011, 14 of the 15 Chilean regions completed the diagnostic phase of the regional land use plan. The Chilean national planning experience similarly suggests that *decentralized* approach (adequately supported by a central government) gives better quality results. Chile is, moreover, an example of how a country can steer itself back in the right direction after an initial failed attempt at LUP.

Mexico's experience exemplifies the importance of the legal context. Since 1995, Mexico's regions have been implementing LUP, though advances are disparate. At the national and sub-national levels, Mexico has almost completed the *formulation stage* of LUP (27 out of 31 states have state land use plans). However, lack of advance at the local level is reported due to government legislation not requiring sub-national governments to implement their plans. Wong-Gonzalez[62] argues that the strong sectoral orientation (environmental vs. urban settlements) of the two major territorial planning programmes (i.e., *General Law of Ecological Balance and Environmental Protection* - LGEEPA; and the *General Human Settlements Law* - LGAH) affects multi-sectoral coordination and preclude these planning instruments to be supportive of a comprehensive and sustainable regional-territorial development policy. On one side the SEDESOL (Secretary of Social Development) is in charge of the state land use plans (PEOTs – State Programmes of Territorial Planning) related to the LGAH; while INE-SEMARNAT (National Institute of Ecology and the Secretary of Environment and Natural Resources) are responsible for the Ecological Land Use Plans (POETs – Comprehensive Ecological territorial land use planning) (Annex 2.8).

Source: ELLA[54], Wong-Gonzalez[62], and Hernandez-Santana et al.[63]

3.2 Multi-stakeholder engagement: integration and participation

Diverse knowledge sources, and stakeholder perspectives are key factors that need to be included in LUP processes, though - in practice - the integration of these elements often remains merely at the recommendation stage [25, 41]. Case study analyses of LUP in Cambodia, Burkina Faso and Lao [25, 64] have identified challenges associated to the effective implementation and integration of participatory elements within LUP (Box 5). Participatory LUP enables implementing agencies (i.e., governments or international aid organizations) to learn more about the local context, as well as fostering community 'ownership' of the outcomes. Local government and community 'ownership' over land use plans can lead to stronger commitments regarding implementation and further investment [19].

Box 5: Challenges associated to participatory land use planning (PLUP) in developing countries

- Level of literacy: A challenge with community-based landscape planning in developing countries is that many of the people involved have low levels of literacy;
- Dominance of local elites: The participation process can help reinforce the influence and interests of the local elite over a silent and unheeded majority;
- Lack of implementation capacity: Cases of PLUP are characterized by deficient methodological standards that hinder the practical implementation of sustainability principles; on-the-ground activities are usually conducted following a potentially loose interpretation of such principles by those responsible for implementation.
- Integration of local and scientific knowledge: Combining hard scientific data with local expertise can be challenging, as local stakeholders may not always understand the consequences of their decisions and may be manipulated by those who better understand the issues at stake, that is, land use planners and/or local leaders.

Source: [65], [66], [67] [19].

PLUP is becoming a central element of donor-supported programmes in developing countries [3, 49]; in many African countries, PLUP has gradually replaced normative approaches to LUP [49]. Developed countries such as Denmark, the Netherlands, the United Kingdom, Germany, the United States, and Australia, all illustrate good practice of balanced participation within the planning process, leading up to zoning plans that promote smart growth, and where *'the participatory option plays a complementary role and scarcely aspires to usurp the creative attributes of planning'* ([49], p. 157).

3.3 Multi-scale relevance and vertical integration

Successful LUP needs to be pertinent at the national level, as well as supported by local authorities [25]. It also has to foster territorial cohesion, improving connectivity for individuals and communities, as well as connecting the ecological, landscape and cultural values of regions/ areas [9]. The Spatial Planning Act (2007) of Denmark is an example of best practice in LUP regarding principles of vertical integration, with a set of planning procedures applicable at different scales (Box 6).

Box 6: Spatial planning in Denmark: multi-scale and multi-sectoral coordination

The Spatial Planning Act ensures the overall LUP in Denmark synthesizes the interests of society with respect to land use, and contributes to protecting the country's nature and environment, so that *sustainable development of society* - regarding both people's living conditions and the *conservation of wildlife and vegetation* – is secured.

The Minister for the Environment establishes a comprehensive framework for regional spatial development planning and municipal planning through national planning reports, overviews of national interests in municipal planning, national planning directives, dialogue, and through other means. The minister ensures, by means of a veto, that *municipal planning complies with overall national interests* (i.e., vertical articulation). Regional councils prepare regional spatial development plans that describe a vision for the region; these strategic plans capture the overall spatial development of the region, and are closely linked with the business development strategy prepared by the regional economic growth fora (i.e., multi-sectoral coordination). Municipal councils summarize their objectives and strategy for development in a municipal plan, which comprises a framework for detailed local plans, as well as for the processing of individual cases, pursuant to the Planning Act, and numerous acts governing other sectors. Source: [68, 69] [9, 70]

3.4 Multi-sectoral coordination

LUP and management are essential tools to better reconcile land use with environmental concerns, and to resolve potential conflicts between sectoral interests and competing land uses[9]. The sectoral division of institutions (e.g., sector ministries, services, etc.) represents a substantial challenge for territorial development (e.g. Mexico's example in Box 5), as comprehensive LUP requires the involvement and cooperation of a wide gamut of sectoral institutions (at the local, regional and national levels)[3]. Denmark (Box 6) is a case in point well-structure multi-sectoral coordination.

A means of enhancing territorial development as a whole is to foster strategies or policies that improve territorial planning through the integration of cross-sectoral policies (e.g., land use, energy and water management) into a *single planning instrument at the regional level*, based on an understanding of territorial dynamics (Box 7).

Box 7: Land use planning and multi-sectoral coordination: an essential nexus for more integrated policies

The land use policy drawn up by the European Union (EU), although having no spatial planning responsibility at the country level, sets the framing guidance for LUP in the EU. Institutional arrangements dictating land use policy in Europe include the EU Objective for Territorial Cohesion, the Water Framework Directive, the Common Agricultural Policy (CAP), Natura 2000, and with increasing importance, Energy 2020.

Territorial cohesion fosters the coordination of sectoral policies and can be regarded as a spatial representation of sustainability. Moreover, trade-offs between conflicting land uses can be negotiated through integrated LUP and territorial planning, as well as via sectoral policies, and targeted policy instruments, such as protected area networks. (EEA, 2010: 5).

The integration of cross-sectoral policies into a *single planning instrument at the regional level* can assist regions in advancing towards more sustainable territorial management, in line with the EU's territorial agenda (see Section 3.8). Multi-sectoral integration acknowledges the specific responsibilities of sectoral policy-makers, and highlights the role sectoral cooperation plays in fostering stronger territorial and urban foci when designing and implementing thematic policies, and reducing undesired externalities. Integrated coastal zone management is an example of multi-sectoral LUP, used for the development of coastal areas in Europe; it addresses conflicts that may arise when planning off-shore wind parks or other ocean technologies, which may interfere with security issues, fishing interests, cargo traffic, tourism or the protection of marine biodiversity.

Source:[9]

Inter-institutional collaboration is essential for identifying synergies that can accelerate the process of LUP. Mexico, Colombia, and Singapore (see Annex 2 case studies) are examples of countries which have established independent institutions in charge of LUP, with strong multi-agency and multi-sectoral coordination between public institutions and civil organizations [54]. Brazil is another example of national LUP which promotes multi-sectoral coordination; in implementing regional LUP through EEZ, it created an environmental commission. This commission works under the coordination of the presidency's planning secretariat so as to enable collaboration amongst other public institutions (NEUR-NEPAMA)[54].

3.5 Multi-functionality of the land

LUP should also be seen from a land cover perspective, as well as from that of “functionality”, which provides linkage with other transversal issues. Most landscapes provide a multitude of functions, and a variety of potential land use combinations. To analyze various planning and management alternatives for multi-functional landscapes, aspects related to ecosystem function and structure need to be considered [71] (Figure 4).

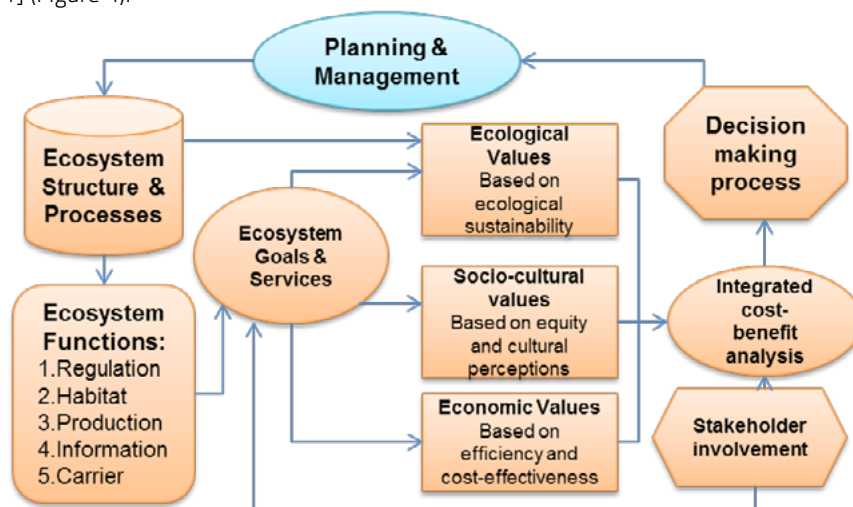


Figure 4: Role of function-analysis and valuation in environmental planning, management and decision making [67]

Adopting a **multi-functional** perspective towards LUP can address conflicts of land use. Lescuyer et al [72] describe a multiple-use forest management approach to six timber concessions of Cameroon, Gabon and the Democratic Republic of Congo, that assisted in solving or reducing actual conflicts between uses, notably regarding agriculture, hunting, chainsaw milling and firewood collection. Likewise, LUP which values the multi-functionality of the land can enhance the protection of biodiversity [73] and promote ecosystem restoration. Strengthening the concept of **landscape multi-functionality** within the process of LUP requires strengthening land governance, as well as generating or amplifying approaches that incorporate the role of ecosystem services into the planning process [46].

3.6 Best planning policies and practices: representative case studies

The case studies below present different approaches of land use policy at national, regional and local (state) levels, where specific criteria of best land use practice (as presented in Section 3) have been identified (Table 2). These case studies were selected based on key principles, and a combination of geographic location (e.g., at least one case study per continent), domain (e.g., rural, urban, peri-urban), and administrative/spatial scale (local, state, national, regional). A template was devised for the systematic analysis of the selected case studies (Part II of this report), and a method of cross-case analysis was applied to look for patterns and linkages within and between them; this also served to study the limitations to the planning approaches, best practices identified, and lessons learned. A mix of regional, national and local scales of LUP, spatial planning and ecological LUP policies were selected and analyzed.

The summary, Table 3, lists criteria of best practice identified, the main focus of the policy, and the land tenure type. Appendix 2 describes background, implementation approach and contributions of policies, and lessons learned. The 1 policies analyzed apply LUP (40%), spatial planning (40%) and ecological/environmental planning (20%). Sixty percent of the policies are based on decentralized approaches towards LUP (Table 3).

Land use planning policy	Location	Scale	Domain	Vertical integration	Multi-sectoral coordination	Participatory	Linked to financial planning	Clear objectives	Future-oriented	Aims at sustainability	Comprehensive	Spatial orientation	Legally binding	Follows subsidiarity	Scale dependant methodology	Centralized / Decentralized	Approach
The Planning and Development Act 2005	Australia	State	T	***	***	**	***	**	*	**	**	*	*	***	***	C	Land use planning
Land Conservation and Development Act 1973	USA	State	U,R,P	**	***	***	*	**	*	**	***	*	***	**	**	D	Land use planning
Land Administrative Law 2004	China	National	U,R	***	***	*	*	***	*	**	**	*	***	**	**	C	Land use planning
European Spatial Development Perspective (ESDP); Cohesion Policy 2014 – 2010; European Territorial Agenda 2020	European Union	Regional	T	*	***	**	*	**	***	***	**	***	*	*	**	D	Spatial planning
The Planning Act 2007	Denmark	National	U,R,P	***	***	***	*	**	***	***	**	***	***	***	**	D	Spatial planning
Spatial Planning and Land Use Management Act 16 (SPLUMA) of 2013	South Africa	National	U,R,P	**	***	***	*	**	*	***	***	*	**	**	**	D	Spatial planning
General Environmental Law 25676 (2002)	Argentina	National	U,R,P	**	***	**	*	**	*	***	***	*	**	***	**	C	Environmental land use planning
Concept Plan 2011	Singapore	National	U,P	**	***	**	***	**	***	**	***	*	**	*	**	C	Land use planning
Spatial Planning Law 26/2007	Indonesia	National	U,R,P	**	***	***	*	**	**	**	***	***	**	**	**	D	Spatial planning
General Law of Ecological Balance and Environmental Protection (LGEEPA) and the General Human Settlements Law - 1987	Mexico	National	T	***	**	***	**	**		***	***	*	**	***	**	D	Ecological Land use planning

Table 2: Best land use policy case studies and criteria of best practice

***: high evidence of the principle of best practice; **: moderate evidence; *: some evidence of the principle of best practice.

Scale of implementation: State (or provincial level), National level or Regional level.

Domain: T: territorial LUP; U: urban LUP; R: rural LUP; P: peri-urban LUP; C: centralized; D: decentralized.

Section 3 presents definition of criteria: vertical integration, multi-sectoral coordination, participatory, linked to financial planning, clear objectives, future-oriented, aims at sustainability, comprehensive, spatial orientation, legally binding, follows subsidiarity, scale dependent methodology.

Table 1 presents definitions of Approach: spatial planning, land use planning, environmental land use planning, ecological land use planning.

Table 3: Summary table of case studies. Underlined are exemplary best practice criteria identified.

Location Policy	Western Australia The Planning and Development Act (2005)
Scale Domain	State level Comprehensive (rural, urban) territorial LUP
Focus	To provide an efficient and effective LUP system that promotes the sustainable use and development of land in the State of Western Australia.
Comment	System based on a combination of institutional arrangements, governed by strong legislation; centralized statutory regional planning and supervision of local planning. The planning system receives funding for metropolitan improvement; statutory authorities exercise powers, allocate resources and provide advice; the planning framework promotes strong multi-sectoral coordination.
Best practice criteria identified	Vertical integration; effective and linked institutions at local, sub-national and national levels ; <u>multi-sectoral coordination (horizontal integration)</u> ; <u>a set of planning procedures applicable at different scales</u> ; clear objectives; legally binding land use plans; <u>linked to financial planning</u> ; aims at sustainability, balancing social, economic and environmental needs; stakeholder engagement; realistic and oriented to local conditions; links LUP and nature conservation laws; future-oriented.
Land tenure	State and private
Case study	Appendix 2.1

Location Policy	Oregon State, USA Land Conservation and Development Act (1973)
Scale Domain	State level Comprehensive LUP (urban, peri-urban, rural)
Focus	The Act requires all cities and counties of the State to prepare comprehensive land use plans consistent with 19 planning goals. The goals express the state's policies on land use and related topics.
Comment	State wide scope. A land conservation and development commission oversees the programme. Local comprehensive plans must be consistent with the state-wide planning goals (e.g., they must consider natural resources in developing land use plans). The laws strongly emphasize coordination, keeping plans and programmes consistent with each other, with the goals, and with acknowledged local plans. The programme fosters citizen involvement and participation, appropriate to the scale of the planning effort.
Best practice criteria identified	Vertical integration; effective and linked institutions at local, sub-national and national levels; <u>multi-sectoral coordination</u> (horizontal integration); a set of planning procedures applicable at different scales; applies a 'light' methodology; <u>legally binding land use plans</u> ; aims at sustainability, balancing social, economic and environmental needs; <u>involves stakeholder (civic) engagement</u> .
Land tenure	State and private
Case study	Appendix 2.2
Location Policy	China Land Administrative Law of the People's Republic of China (LAL) 2004
Scale Domain	National level Comprehensive (rural, urban) territorial LUP
Focus	Regulating land classification and zoning, resource preservation and protection of the environment. Land-use master planning underpinned by: protection of communal farmlands; land-use efficiency; comprehensive mechanisms for managing different land-uses; sustainable land use, environmental protection and improvement, and the balancing of demands among various kinds of uses.
Comment	It promotes centralized LUP; land-use master plans need be aligned with (1) the national economic and social development plan, (2) requirements for resource preservation and environment protection, and (3) land availability and productivity, and land demands for infrastructure projects. Two-tiered planning system of implementation: the ministry of land and resources produces the land use plans; a second administrative tier relates to sectoral planning systems responsible for developing special land use plans. The LUP system has three main categories: master, special topic and project-oriented plans.
Best practice criteria identified	<u>Vertical integration</u> ; effective and linked institutions at local, sub-national and national levels; <u>multi-sectoral coordination</u> ; a set of planning procedures applicable at different scales; clear objectives; <u>legally binding land use plans</u> ; aims at sustainability, balancing social, economic and environmental needs.
Land tenure	State and communal
Case study	Appendix 2.3

Location Policy	European Union European Spatial Development Perspective (ESDP) 1999; Cohesion Policy (2014 – 2010); European Territorial Agenda 2020 (2011)
Scale Domain	Regional level Territorial land use and spatial planning
Focus	Set of spatial planning policies that influence land use and management of the EU as a 'region'; examples of best practice for sustainable land management and territorial cohesion, and territorial development.
Comment	Patterns and trends in EU land use, and land cover changes, are influenced by planning systems adopted at national level; centralized vs. decentralized; regional economic planning approaches (France, Portugal, Germany); comprehensive integrated approaches (Nordic countries and Austria); land management oriented (UK, Ireland, Belgium); urban planning focused (Mediterranean countries). Spatial planning does not fall within the scope of the EU's authority, but initiatives such as the ESDP contribute to its framing. Taking territorial cohesion into account fosters coordination amongst various spatial policies, and facilitates cooperation among the parties responsible for land use and development planning.
Best practice criteria identified	Effective and linked institutions at local, sub-national and national levels ; <u>multi-sectoral coordination (horizontal integration)</u> ; a set of planning procedures applicable at different scales – subsidiarity; clear objectives; legally binding land use plans; aims at <u>sustainability, balancing social, economic and environmental needs</u> , multi-stakeholder engagement; <u>territorial cohesion</u> ; <u>spatial orientation</u> ; <u>future-oriented</u> .
Land tenure	State and private
Case study	Appendix 2.4
Location Policy	Denmark The Planning Act (2007)
Scale Domain	National level Comprehensive (rural, urban) spatial planning
Focus	The act pursues five goals for spatial planning: 1. Rural and urban areas should be distinct; 2. Development should benefit all of Denmark; 3. Spatial planning should be based on respect for the identity of cities and towns, respect for nature, the environment, the landscape, and the townscape; 4. Spatial planning and investment in infrastructure should be closely integrated; 5. Spatial planning should be comprehensive.
Comment	The planning system follows principles of decentralization, framework control and public participation. The Minister for the Environment is responsible for upholding national interests through national planning. The Act stipulates minimum rules regarding public participation.
Best practice criteria identified	<u>Vertical integration</u> ; strongly decentralized; effective and linked institutions at local, sub-national and national levels; multi-sectoral coordination (horizontal integration); <u>a set of planning procedures applicable at different scales –subsidiarity</u> ; clear objectives; legally binding land use plans; interlinkage with financial planning; aims at <u>sustainability, balancing social, economic and environmental needs</u> ; <u>stakeholder engagement</u> ; <u>spatial orientation</u> .
Land tenure	State and private
Case study	Appendix 2.5

Location Policy	South Africa Spatial Planning and Land Use Management Act 16 (SPLUMA) (2013)
Scale Domain	National level Comprehensive spatial planning (rural, urban, including infrastructure development)
Focus	Framework that specifies the relationship between national spatial planning, the land use management system, and other kinds of planning. It draws from five major principles: sustainability, equity, efficiency, integration and good governance.
Comment	The Act promotes greater consistency and uniformity in the application procedures, and in decision-making by authorities responsible for land use decisions and development applications; it provides for the establishment, functions and operations of municipal planning tribunals; it enables and enforces land use and development measures. Decentralized planning is fostered.
Best practice criteria identified	Clear formulation of objectives; legally binding land use plans, vertical integration; <u>participatory; recognition of stakeholders and their differing views</u> ; effective and linked institutions at local, sub-national and national levels ; <u>multi-sectoral coordination</u> (horizontal integration); <u>spatial orientation</u> ; a set of planning procedures that are applicable at different scales; interlinkages to financial planning; <u>aims at sustainability, balancing social, economic and environmental needs</u> .
Land tenure	State, private, communal
Case study	Appendix 2.6
Location Policy	Argentina General Environmental Law 25676 (2002)
Scale Domain	National level Comprehensive land use regulation (urban, rural)
Focus	Environmental land use planning is one of the instruments for environmental policy and management. The process of environmental planning has to consider political, physical, social, technological, economic, legal and ecological aspects; it must ensure environmentally adequate use of natural resources, maximize production and utilization of different ecosystems, while minimizing degradation and misuse of resources, and promoting social participation in decisions related to sustainable development.
Comment	Argentina's constitution includes a right to a healthy environment (Article 41). The General Environmental Law requires the implementation of land use plans throughout the country. The Constitution, the General Environment Law, and related provincial laws dealing with land use or with the establishment of frameworks for the integration of environmental and land use plans provide the legal basis upon which to develop the laws and institutions for comprehensive national LUP. The LUP process is centralized; an inter-federal agency (COFEMA) is tasked with coordinating amongst the provincial environmental agencies, and with the federal environmental authorities.
Best practice criteria identified	Vertical integration; effective and linked institutions at local, sub-national and national levels; <u>multi-sectoral coordination</u> (horizontal integration); <u>a set of planning procedures applicable at different scales</u> ; clear objectives; legally binding land use plans; <u>aims at sustainability, balancing social, economic and environmental needs</u> ; principle of subsidiarity; stakeholder engagement.
Land tenure	State and private
Case study	Appendix 2.7

Location Policy	Mexico General Law of Ecological Balance and Environmental Protection (LGEEPA) and the General Human Settlements Law 1987
Scale Domain	National level Comprehensive national ecological LUP (rural and urban)
Focus	LUP is framed by social development and environmental policies. The Ecology Law (LEEPGA) has provisions for environmental planning, ecological organization of the territory, and the sustainable use of natural resources. National urban planning is implemented under the General Human Settlements Law through a series of other federal, state and municipal urban development plans and programmes, which include: the national urban development programme and “ zoning programmes for integrated urban zones”.
Comment	LUP implementation follows a decentralized, sectoral approach, with two main coordinating agencies: SEMARNAT (national, regional and territorial LUP, as specified in the LGEEPA), and SEDESOL (urban ILUP). Stakeholder involvement is mandatory, and SEMARNAT is responsible for multi-sectoral coordination when preparing the national ecological zoning plan. Municipalities (or the federal district) issue local ecological zoning plans. Evident legislative intention that environmental policy instruments (ILUP) should be used to ensure environmental protection and social development in urban and rural areas; however, financial, legal, and technical support is needed to coordinate human activities with the environment.
Best practice criteria identified	<u>Vertical integration</u> ; effective and linked institutions at local, sub-national and national levels ; multi-sectoral coordination (horizontal integration); a set of planning procedures applicable at different scales; clear objectives; legally binding land use plans; <u>aims at sustainability, balancing social, economic and environmental needs; multi-stakeholder engagement (promotes civic engagement, special recognition of women’s role and indigenous communities).</u>
Land tenure	State, private, communal (ejidos and comunidades lands)
Case study	Appendix 2.8
Location Policy	Singapore Concept Plan (2011)
Scale Domain	National level LUP [urban and transport]
Focus	The Concept Plan for land use outlines the strategies to provide the physical capacity to sustain a high quality living environment for future generations. It sets aside land to provide options beyond 2030, so that future generations will have room for growth and development. Strategies to sustain a high quality living environment include: integrating greenery into the living environment; enhanced transport connectivity; sustaining a vibrant economy with good jobs; and ensuring room for growth and a good living environment in future.
Comment	Singapore’s land scarcity makes planning crucial. The Concept Plan and associated master plan provide a comprehensive, forward-looking and integrated planning framework for sustainable development. It has played a vital role in helping balance competing land use needs, such as housing, industry, commerce, parks and recreation, transport, and community facilities. In reviewing the Concept Plan, all major land needs are considered in collaboration with relevant government agencies. Public consultation is a component of the planning process; master plans are reviewed every 10 years, with strong multi-agency/multi-sectoral coordination driving implementation, with coordination from the Ministry of National Development.
Best practice criteria identified	Vertical integration; effective and linked institutions at local, sub-national and national levels ; <u>multi-sectoral coordination (horizontal integration)</u> ; a set of planning procedures applicable at different scales; clear objectives; legally binding land use plans; aims at sustainability, balancing social, economic and environmental needs; stakeholder engagement; realistic and oriented to local conditions; links LUP and nature conservation laws; <u>LUP is future-oriented.</u>
Land tenure	State
Case study	Appendix 2.9

Location Policy	Indonesia Spatial Planning Law 26/(2007)
Scale Domain	National level Comprehensive (rural, urban, transport) spatial LUP
Focus	Spatial planning is a process of plan-making, implementation and development control. The law includes guidelines for this process to be adopted at national, provincial and local levels. The act promotes multi-sectoral coordination, and contains a transport plan, a green space plan and information related to informal sectors, especially in the city's spatial plan.
Comment	Decentralized process; promotes public participation. The national spatial plan covers a 20-year period and is reviewed every five years. The National Spatial Planning Coordination Board (chaired by the Coordinating Minister for the Economy) is responsible for drafting the spatial plan. The Directorate General of Spatial Planning of the Ministry of Public Works handles the practical implementation of the board's plan. Enforcement of spatial plans has been weak. Most planning departments in Indonesian cities lack zoning inspectors. Technical and legal training, as well as adequate operational budgets for spatial plan inspections by officials of the lowest level of government (e.g., sub-district kecamatan and neighbourhood kelurahan) are needed to enhance enforcement.
Best practice criteria identified	Vertical integration; effective and linked institutions at local, sub-national and national levels; multi-sectoral coordination (horizontal integration); <u>a set of planning procedures applicable at different scales; stakeholder engagement</u> ; legally binding land use plans; LUP relates to spaces and places; accountability.
Land tenure	State, private, communal.
Case study	Appendix 2.10

The ten case studies provided elements for the discussion and synthesis that follows.

3.7 Key directions for supporting SLM through land use planning policy

The analysis of best LUP policy and practice through case studies (Table 4) illustrates that, for land use policy to be supportive of sustainable land use options and/or SLM, it must:

- **Promote development of land use options that reconcile conservation and development objectives,** preventing loss of ecosystem services [74] [75];
- **Include multi-sectoral coordination amongst actors with a say in LUP.** Agreement over roles and responsibilities for land management is needed between the entity responsible for coordination and implementation of LUP, and other relevant sectoral government agencies. Further, many of the case studies point to the existence of a need for clear guidance in policy implementation regarding how SLM issues should be addressed through the planning system;
- **Consider SLM early on in the LUP process.** SLM must be taken into account at different levels in the LUP hierarchy, through strategic and statutory planning processes at regional, national, state, and/or local levels. For example, case studies analyzed show it is difficult to achieve SLM outcomes through the subdivision and development of land, unless SLM has been adequately addressed through earlier strategic (e.g., regional and local planning strategies) and statutory planning (e.g., regional and local planning schemes and amendments). Opportunities to achieve SLM outcomes in an urbanized environment (e.g., green infrastructure in Singapore) are highly constrained and the change from rural to urban use is usually irreversible;
- **Ensure planning and management of land assets occur at a scale that reflects their natural extent.** Regional planning provides the most appropriate scale for considering the natural extent and significance of environmental assets which exist across the borders of a number of local governments (or districts, as in Ethiopia). It provides direction for recognizing and protecting these assets through LUP (e.g., case study of Western Australia). Planning at the regional scale also enables the *cumulative impacts of future development* on the natural capital of a region to be considered, as well as the sharing of responsibility for protection and management across a wider number of stakeholders;
- **Ensure commitment and cross-agency government support** (vertical and horizontal integration) for the preparation and implementation of comprehensive planning strategies. This is vital to ensuring SLM is adequately addressed for matters such as managing urban growth, facilitating development appropriate to the suitability of the land and the socio-economic context, and for identifying significant natural capital (e.g., significant agricultural lands, water resources, biodiversity hotspots). Partnerships between government agencies (planning, environment, primary industries) and local governments (councils, municipalities) for the identification of priority natural capital is key; in this way, recommendations for its protection and sustainable management can be made, thereby assisting the integration of SLM into comprehensive LUP.
- **Provide technical and practical guidance for local/sub-national LUP strategies, including capacity building.** Both the quality of local planning strategies, and the extent to which they are able to address SLM can often depend upon the level of guidance and coordinated support provided by state agencies to local governments (e.g., case studies of Mexico and Ethiopia). The role of local governments in achieving SLM outcomes through local level planning is often constrained by low capacity in terms of resources and expertise (e.g., Central America, in the case of LUP inclusive of protected areas, and Ethiopia's sustainable range management, or the case of Indonesia – see Annex 2). Options to support local government's capacity to achieve SLM outcomes through LUP include: partnerships for capacity building; more efficient use of local government resources; and provision of financial support and technical assistance from state agencies (as in the Western Australia case study). Mechanisms identified in case studies of local LUP that may advance SLM outcomes include: reservation; zoning; special control areas; general provisions that relate to all zones; and special provisions that relate to particular development areas (e.g., China's Land Administration Law protecting arable land, or Australia's protection of significant agricultural lands).
- **Include guidance regarding SLM as part of comprehensive LUP strategies.** Several case studies analyzed (e.g., Western Australia, Singapore, Argentina, and Denmark) have structures whereby national, regional and sub-regional planning, policies and strategies are united into a central framework, so as to provide context for LUP (i.e., the Planning and Development Act of Western Australia, and the General Environmental Law of Argentina). These frameworks contain guidance for a range of SLM issues, including land degradation, land use conflicts, management of water resources, biodiversity conservation, and coastal management. However, the effectiveness of policy guidance for different SLM matters varies, and more support with regard to the interpretation and application of SLM, at different stages of the planning process, appears to be needed (e.g., several case studies show that good guidelines are often poorly applied and/or enforced). Several of the comprehensive national LUP policies and strategies analyzed experience shortfalls, particularly related to enhanced multi-sectoral

coordination and law enforcement. These difficulties need be addressed so as to better support SLM within LUP. This also relates to *conflicts amongst different (sectoral) policies related to SLM*, as well as to the limited amount of guidance provided regarding implementation of SLM at different stages of the planning process, and also the issue of prior land use plans that are already legally binding.

- **Ensure whole-of-government involvement in LUP for SLM.** Western Australia (case study A2.1) is an example of centralized LUP, wherein challenges relative to the integration of SLM into LUP can be seen, due to the separate nature of environmental legislation, planning legislation, and non-statutory arrangements for regional natural resource management. Effective coordination between planning and environmental agencies needs to occur for the better integration of natural resource management within the planning system. Improved communication and networking between agencies is required to this end.[7]

4. CONTRIBUTIONS OF LAND USE PLANNING TO SUSTAINABLE LAND USE AND MANAGEMENT

This section discusses the contributions of LUP to the identification and promotion of sustainable land use and management options (Table 4). LUP (including spatial planning) fosters a participatory definition of future land uses. Keeping LUP in mind is therefore useful whenever natural resources and/or biodiversity need to be protected, rehabilitated, or when unexplored land use potential needs to be identified and evaluated (see section 4.4) [3].

Table 1 highlights the emphasis of LUP on a systematic assessment of land and water potential so as to enable environmentally sound decisions that consider the economic, social and environmental effects of development, including spatial targeting of areas with particularly high value (e.g. biodiversity hot spots, land highly suitable for agriculture), or low tradeoffs between land uses [14, 76].

Land use zoning is an output of spatial and LUP processes; it involves the division of a given territory into zones, with different rules and regulations for land use, management practices, and land cover change. The effectiveness of a particular land zoning unit may be influenced by management decisions in the broader landscape; hence, the emphasis on a *landscape scale approach to LUP* [41]. Land use zoning plans can cover national, regional, or local administrative units (e.g., communities, municipalities, provinces, and districts), and can accommodate multiple land uses (e.g., mining, agriculture, urban development, peri-urban development, etc.).

4.1 Land use planning: an instrument for SLM

Case studies analyzed show that spatial and LUP can contribute to SLM through [6–8]:

- protecting land of agricultural significance from urban and peri-urban encroachment;
- protecting natural capital from urban and peri-urban encroachment;
- preventing or limiting exposure of saline and acid sulphate soils;
- rehabilitation, and/or avoidance of contaminated sites;
- adaptation to salinization and rising groundwater levels;
- ensuring land use reflects land capability;
- protection of the quality, and quantity of, ground water supply sources;
- protection of water quality and minimization of erosion through water-sensitive urban design;
- minimizing eutrophication and other pollution of surface and groundwater;
- establishing appropriate buffers between development, and coastal estuaries, and water foreshores;
- floodplain management;
- preventing or limiting vegetation clearing;
- protecting natural habitat from destruction and fragmentation;
- preservation and enhancement of ecological corridors;
- reducing car dependence by transport demand management;
- accounting for sea-level rise and increased storm surge, arising from coastal development.

Table 4: Examples of LUP which identifies and promotes sustainable land use options

Planning approach	Domain & scale	Purpose / sustainable land use options	Comments	Country / region
Spatial / land use zoning	Rural, regional	Mapping of important agricultural land (i.e., land which is highly suitable for important local and regional agricultural industries)	This is a form of strategic land use policy to protect significant agricultural land and water resources; the goal is also to inform local government LUP, including local/regional economic and industry development strategies	Australia, NSW[77]
Land use planning / land use zoning	Rural, local	Ecosystem conservation: protected areas	Best practice, fostering conservation; this includes municipal master plans, and land use codes with prescribed zoning and permitted uses next to or within protected areas. Bi-regional, regional master plans, regional tourism plans, and corridor plans are used to guide municipal plans. Weak governance and enforcement capacity, by state or local authorities, can have indirect negative effects on biodiversity, due to encroachment of land use from adjacent zones.	Mexico, Guatemala Nicaragua, Honduras, Costa Rica and Panama[60]
Land use planning	Transboundary; ecosystem-based	Conservation and sustainable use of tropical forest (Selva Maya)	Box 8.	Belize, Guatemala and Mexico[78]
Land use planning	Urban	Balance sustainable land use and socio-economic development; identify environmentally feasible land use options.	Land use master plan and strategic environmental assessment. Supported by geographic information systems (GIS).	Wuhan city, Hengyang city[17]
Land use planning	Comprehensive, provincial level	Ecological restoration	LUP and strategic environmental assessment for ecological restoration based on local environmental conditions. The LUP provides a detailed analysis for land utilization, to promote the most beneficial land use arrangement and structure.	Jilin province, China[17]
Ecological land use planning	Rural, sub-national level	Rehabilitation of abandoned agricultural lands, including both afforestation and pasture rehabilitation, together with a succession option (e.g. leaving pastures as natural succession areas)	Ecosystem-based approach to LUP.	Ecuador [95]
Land use planning	State	Biodiversity conservation, sustainable use and development of land	Box 9	Western Australia

Planning approach	Domain & scale	Purpose / sustainable land use options	Comments	Country / region
Participatory rural land use planning	Village / sub-regional (district level)	Sustain rangeland production systems in communal lands; ensure mobility of pastoralists and hunter-gatherers is respected in the process of LUP. Address land use conflicts from competing land uses.	PLUP is part of the Village Land Act and the Land Use Planning act of Tanzania. Land held by individual villages is insufficient to sustain rangeland production systems. Legislation states that joint village LUP should be carried out where resources (land, water) are shared amongst villages.	Kiteto District, Tanzania [79]
Participatory land use planning	Rural, local	Reconcile conservation and development objectives; protect biodiversity; prevent loss of ecosystem services; clarify customary land tenure; resolve land use conflicts; plan future land uses: accelerate the transition from subsistence to market-oriented agriculture.	Participatory public process, bottom up; takes the multi-functionality of land (agriculture, cropping, livestock systems, plantations, wildlife) into account, as well as the multiple institutions concerned (NGOs, government agencies, practitioners, local authorities, international donors).	Laos[25, 80]
Spatial land use planning	Comprehensive, sub-national	Determine areas for urban-industrial development, for conservation, and eco-tourism.	GIS-based land capability analysis.	Minoo Island, Iran.[81]
Participatory land use planning	Rural, catchment level	LUP in a high-priority electricity-production river basin, with conflicting interests between agricultural production and electricity generation.	Participatory, multi-stakeholder engagement, considering environmental, social and economic aspects of development in the basin	Birris river Basin, Costa Rica [37]

In areas of communal land tenure, LUP assists in sustainable management of rangelands, inter alia, resolving issues related to competing land uses and land tenure conflicts. This is the case in Tanzania (Box 8), where villages develop joint land use plans, entering into agreements for resource sharing and protection of essential livestock corridors (stock routes), so as to reduce potential conflicts relative to land use [79].

Box 8: Joint village LUP for sustainable rangeland management - Tanzania

Key issues:

Population growth, and decline in land productivity, have increased pressure on land use, with a growing number of conflicts occurring between different land users. This often relates to a number of adjacent issues, such as: insecurity of land use and tenure; poor development of land markets; degradation of soil and water resources; deforestation; and increasing migrations of people and livestock. *Competition for uses of land exists and it causes land conflicts*; this is exacerbated by increased livestock numbers and a breakdown in the ability of traditional and local governance regimes to maintain harmony. This, in turn, has led to poorer levels of sustainable land use, and undermined rural development.

Conventional LUP tends to limit the mobility of pastoralists and hunter-gatherers. However, in rangelands, the sharing of resources (i.e., water, land) and the movement of livestock across village boundaries is the norm, given that lands held by individual villages are usually insufficient to sustain rangeland production systems.

Contribution of LUP:

The Village Land Act and the Land Use Planning Act establish the legal framework for LUP at the village level, in Tanzania. Village LUP and management regulates the use of land resources; it enables: the resolution of land conflicts which may arise over communal lands; the improvement of land tenure security, and land use; and the improvement of land husbandry measures, according to the priorities and capacities of stakeholders.

- **Benefit, Outcomes and Impact:** PLUP ensures *land tenure security*, and that the *rights to resource access* of pastoralists, agro-pastoralists and crop farmers are negotiated and protected.
- Wide community involvement promotes a more open and transparent process. Pastoralists and farmers benefit from reciprocal agreements (transhumant herd's manure farmers' fields; farmers' livestock are raised in neighboring pastoral areas). Carefully negotiated livestock movements support local livelihoods and contribute to national economic growth.
- PLUP includes *strengthening of local level decision-making* through institutional capacity-building at the district and village levels. Participatory land use management teams are established and trained as part of the process to better manage land, and deal with land use problems.
- **Reflections, lessons learned:** LUP follows a decentralized framework; the role of local authorities (districts/ municipalities, villages) for the integration and implementation of LUP is acknowledged, though more effective structural links between national institutions, districts and villages are needed (i.e., vertical integration).
- Local level institutional development through capacity building, and sufficient financial support are both required, including for conflict resolution processes.
- Capacity of village councils and village land use management committees to administer and manage village lands remains low, resulting in poor enforcement.
- There is a need for better collaboration between the following actors: government institutions responsible for LUP; donor agencies; national and international non-governmental organizations (NGOs); and financial institutions. This is necessary so as to jointly support communities to strengthen their rights to land and resource access through processes such as the joint village land use plans. Enhanced coordination mechanisms are, thus, needed.
- Tools such as participatory rangeland resource mapping enable the involvement of a large number of community members, as well fostering two-way learning, with experts and development agencies.

Source: [79]

4.2 Land use planning: an instrument for promoting sustainable land use and ecosystem restoration

LUP, depending on how it is structured and implemented, can damage or conserve ecosystem services. It is, therefore, important that land use planners are aware of the existence and importance of potential ecosystem services in order to balance their protection with the benefits gained from alternative uses. Furthermore, awareness of the intrinsic and economic values increasingly attributed to environmental services can be helpful for decision-making [3].

LUP instruments can significantly influence ecosystem restoration, promote sustainable land use (Box 9) and aid in the conservation of biodiversity (Box 10). Ecosystem restoration is a means of conserving or enhancing biodiversity, as well as sustaining livelihoods in degraded landscapes, by reinstating or enhancing the flow of services [82].

Box 9: Land use planning to promote sustainable land use and conservation of tropical forest

Key issues:

Selva Maya is a region of tropical forest covering a vast area of Belize, Guatemala and Mexico. It is exposed to a number of pressures, such as forest fires, illegal logging, the exploitation of flora and fauna, and the advancing agricultural frontier. The main challenge is to protect the Selva Maya in the long term, through sustainable resource use.

Contribution of land use planning

LUP, taking environmental protection into consideration, is one activity within a larger programme devised to promote protection and sustainable use of this area. PLUP has been conducted at the community level (Guatemala) and in communally owned land (ejidos of Mexico). This approach enables civil society groups, to contribute to the development of the plans. That raises the level of acceptance of the plans and significantly improves their chances of successful implementation. LUP, in this context, leads to the subsequent development of management plans for sustainable use and forest protection, as well as of agro-ecological projects that develop capacity on sustainable agriculture, promotion and marketing of products.

Indirect benefits of LUP extend to improved environmental governance of the region, cross-sectoral collaboration between governmental and non-governmental actors within each country, in particular to improve forest-fire prevention, cross-border ranger patrols, and alternative income sources for local communities.

Source: [78]

LUP can achieve conservation outcomes by: identifying and protecting natural areas with significant biodiversity values; directing development away from natural areas; and controlling the impacts of land uses on natural areas. For example, the Planning and Development Act of Western Australia (Box 10) has established biodiversity as a valid planning consideration; the act states that preservation and conservation matters need to be dealt with by the planning scheme. Specifically, its Planning Framework contains provisions for: the protection of biodiversity, preventing or limiting vegetation clearing; the protection of habitat from destruction and fragmentation; and the preservation or enhancement of ecological corridors.

Box 10: Biodiversity conservation through land use planning in Western Australia

The Planning and Development Act of Western Australia (WA) includes biodiversity conservation as a valid planning consideration applicable to regional, state and local planning policies and schemes. **Planning strategies,** schemes and related decision-making need to: (i) Consider *mechanisms to protect areas of high biodiversity and conservation value*; (ii) Seek to avoid or minimize any adverse impacts on areas of high biodiversity or conservation value as a result of changes in land use or development; (iii) Assist in establishing a *comprehensive, adequate and representative conservation reserve* system throughout the state; (iv) Safeguard and enhance linkages between terrestrial and aquatic habitats which have become isolated, including the reestablishment of habitat corridors; (v) Assist the return of *areas of high biodiversity conservation values* through mechanisms including planning controls or conservation covenants; (vi) Support the use of management plans to protect areas of high biodiversity conservation value in the long term.

Limitations:

Limited practical and technical guidance is available for integrating biodiversity considerations and achieving conservation outcomes through *LUP at regional and local levels*. Local governments across the southwest of WA are developing local biodiversity strategies to improve the conservation of local natural areas through LUP processes. However, these local policies and positions need to be incorporated into planning policies and strategies at the state level. Furthermore, the availability of regional information on biodiversity assets and functions, and the integration of these considerations into strategic planning at the regional level, is limited, hindering the ability of local governments to effectively plan for local biodiversity conservation.

Reflections:

Despite the strong legislative and policy basis for biodiversity conservation within LUP, the clearing of significant local natural areas continues to occur as result of LUP decisions. Local governments, the departments of primary industries, the Planning Commission of WA and the Minister for Planning - *through administration of the planning system* - bear responsibility for addressing biodiversity conservation in the context of the sustainable use and development of land. The challenge remains to make the process for biodiversity strategy preparation, and its subsequent integration into the LUP system, simpler and more streamlined.

Source: [7]

Integrated spatial planning has shown itself to be cost-effective for identifying *hotspots for the restoration of natural capital and enhancing landscape multi-functionality* (through the provision of multiple ecosystem services) [59]. A recent Australian experience in dryland agricultural areas allocated 53,000 ha for ecological restoration within the most cost-effective hotspots so as to achieve a set of environmental and economic goals, including a pre-established planning target of increasing remnant vegetation. The project showed that when allocating funding programmes for the restoration of natural capital and betterment of landscape multi-functionality, using spatial targeting – as compared to a random approach – could double water benefits, and increase the benefits to species and ecosystems by 25%. The impact, meanwhile, on net economic returns from agriculture was projected to be an increase of one third, as compared to a situation without a strategic approach [59].

Land use policy promoting ecosystem rehabilitation or restoration can rely on instruments such as land use zoning to create Protected Areas (PAs), or to designate land use restriction. Land zoning for a specific purpose can occur in an *ad hoc* manner, covering only specific high priority areas [2]; such is the case of the mapping of important agricultural land by the State of New South Wales, in Australia, to restrict development of extractive industries (see Table 4) [77]. Land use zoning has also been used as a policy option in the recent transitions from deforestation to net reforestation, in China, India, Vietnam and Bhutan [83].

Integrated LUP can contribute to the management needs of national PA systems [30]. However, programmes of ecosystem restoration, through LUP and regulation mechanisms, used in or near PAs of Central America, for instance, to reduce threats from adjacent land uses⁴ have showed that PAs need to be part of long term planning strategies in order to avoid being revoked or degazetted to make room for more profitable land uses such as mining and agro-industrial plantations [60, 84] [2].

For sectoral policies relative to ecosystem restoration and/or the safeguarding of biodiversity to be included in planning systems, they need first to be incorporated into planning policies and strategies. Mechanisms to integrate biodiversity conservation into the local-scale LUP process are essential to bolster the efforts of national governments in the protection and conservation of biodiversity [84]. Collaborative and/or cross-boundary LUP and decision-making are equally important for the conservation of transboundary ecosystems (see Table 4) as well as for the availability of regional information on biodiversity assets and functions (see Box 10).

4 e.g., expansion of agriculture, mining and logging, infrastructure projects, land speculation, urban-residential and tourism development.

4.3 Land use planning: a tool for sustainable infrastructure development

Land use and spatial planning play a key role in facilitating and delivering green infrastructures in urban and peri-urban areas [9]. This can set the physical pattern upon which mobility patterns are based for future generations [85] in tandem with helping to reduce urban sprawl and loss of natural habitats and biodiversity. Furthermore, better understanding and inclusion of integrated transport and LUP at urban and regional scales result in higher rates of growth and development in the national economy (see case study of Denmark, A2.5).

Green infrastructures offer a promising way to integrate biodiversity and ecosystem services in urban planning and governance. These infrastructures form a network of natural and semi-natural areas, such as green spaces in peri-urban and urban areas; they enhance ecosystem health and resilience, contributing to biodiversity conservation in an integrated manner, improving, *inter alia*, human wellbeing. Cities of the European Union and of Singapore are amongst those that have already begun to implement green infrastructure (i.e., parks and other green spaces, green roofs and walls, urban farms and forests) through policy and planning instruments, particularly spatial planning. Green infrastructures can enhance and protect biodiversity in urban areas, as well as restore degraded urban ecosystems (e.g., brownfield former industrial sites). Evidence suggests green infrastructures have multiple indirect benefits, too, such as: minimizing natural disaster risks, including lowering surface water run-off which reduces the risk of flooding; connecting habitats; and mitigating urban heat island effects [9].

4.4 Land use planning: a tool to improve economic opportunities

LUP affects the performance of regional economies. Government interventions in land use can promote regional economic prosperity by: a) eliminating negative externalities, protecting public goods and implanting amenity improvements; b) encouraging compact development, associated with higher efficiency in the provision of public services, as well as benefits related to potential agglomerations (urban areas); c) improving transportation outcomes; and, d) reducing the uncertainty and transaction costs involved in land development [86].

The economic consequences of LUP and regulation are context-dependent [86]. For instance, a 2009 study to find *new opportunities for development* for a range of industries across northern Australia (120 million ha of vast, remote land with variable and extreme climate that occupies almost a quarter of the continent) relied on land resource information for development planning. Land suitability analysis (part of the LUP process) showed that increased agricultural development might be possible in locations where suitable and available soils (and water resources) exist, and where the required infrastructure (i.e., irrigation, roads) could be developed. The study concluded that land should be developed and utilized within the limits of its sustainable capacity to avoid a rapid decline in soil condition (Figure 5); of particular significance were

degradation issues relating to erosion, soil acidification, carbon decline and salinity, given the low resilience of the ancient, fragile and depleted soils of Northern Australia.

Some areas were identified for potential arable development, though facing considerable management issues (e.g., most of the soils are low in nutrients and may require significant fertilizer inputs). If agriculture were to be intensified, one suggested alternative for sustainable land use and management was to plan and develop a mosaic of intensively - and well - managed areas within a broader, relatively undeveloped landscape for wider ecosystem benefits [87].

Integrated programmes for LUP related to regional development and management, as in the aforementioned example, usually require a number of trade-offs between sectoral policies that drive economic, social and environmental processes and dynamics: industry, transport, energy, mining, forestry, agriculture, recreation, and environmental protection. Awareness of these trade-offs can underpin effective land allocation that promotes SLM and multi-functionality of the land system through efficient supply of multiple ecosystem services [14]. LUP scenarios are increasingly used to model the potential future impacts (social, economic and environmental) of changes on land use and ecosystem services. Land use trade-off models can be applied for efficient land allocation, anticipating competition for land resources that may result from supplying multiple ecosystem services (Box 11).

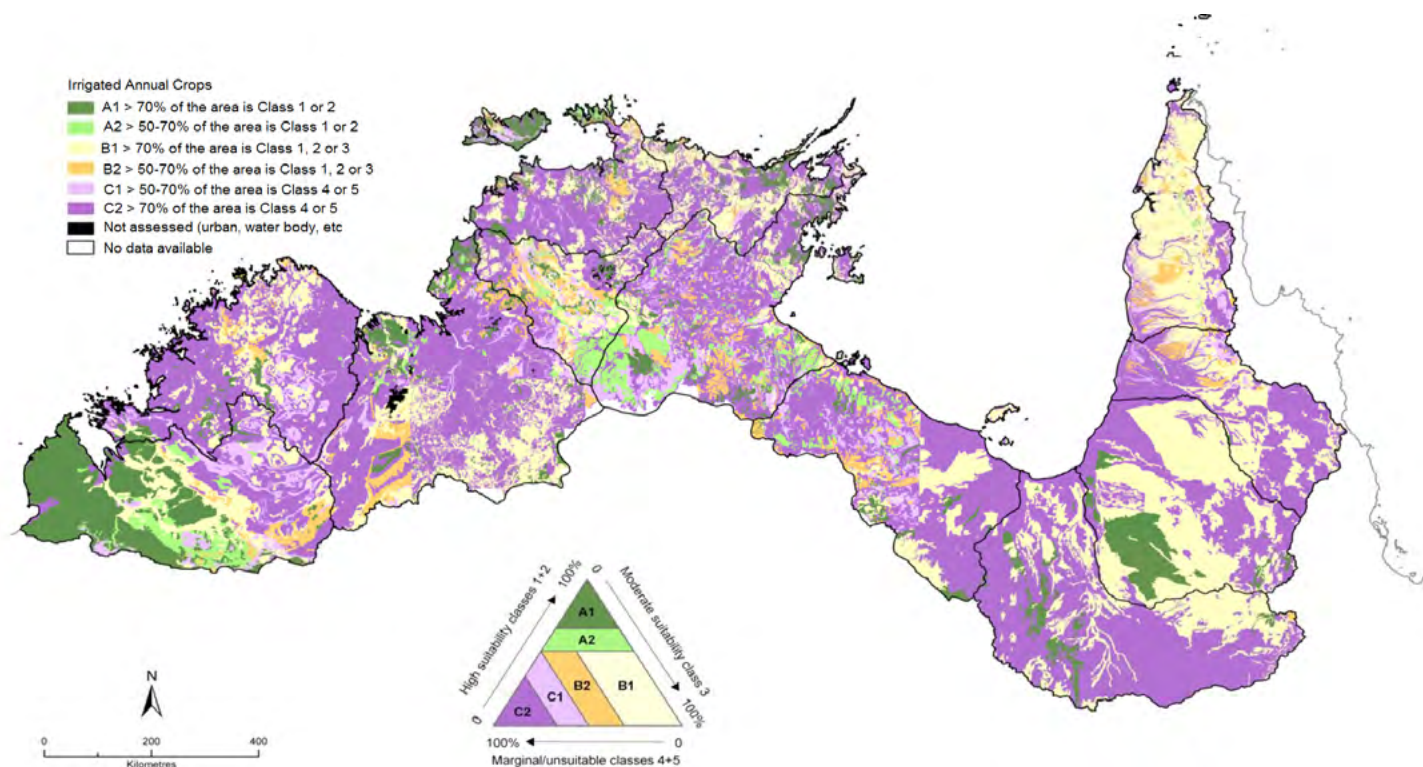


Figure 5: Suitability of irrigated annual crops in Northern Australia. Most land is marginal or unsuitable for that specific use (Classes C1 and C2). Source: Wilson et al., 2009 [87]

Box 11: Efficient land allocation and spatial targeting: planning future land use alternatives

An integrated assessment of the efficiency of land use in supplying emissions abatement, agricultural production, water resources and biodiversity services was recently undertaken in Australia. The assessment considered four global outlooks from 2013–2050 and was done in an attempt to gauge the efficiency of a carbon market in Australia's intensive agricultural land. Using the land use trade-offs model (LUTO) – an integrated, environmental-economic model of land systems – to project potential land use and ecosystem services under intersecting combinations of global change and domestic policy, the research found substantial potential for land use transition from agriculture to carbon plantings, environmental plantings, and biofuels cropping. This varied in accordance with each scenario, with impacts on the sustainability of economic returns and ecosystem services, including food/fibre production, emissions abatement, water resource use, biodiversity services, and energy production.

The type, magnitude, timing, and location of land use responses, and their impacts, were highly dependent on scenario assumptions including: global outlook and emissions abatement efforts; domestic land use policy settings; land-use change adoption behavior; productivity growth; and capacity constraints. With strong global abatement incentives complemented by biodiversity-focused domestic land use policy, land use responses can substantially increase and diversify economic returns to land, and produce a much wider range of ecosystem services, such as emissions abatement, biodiversity, and energy, without major impacts on agricultural production. The LUTO model evidenced better governance is needed for the management of potentially significant impacts on water resources.

The results have wide-ranging implications for land use and sustainability policy, as well as for governance at both global and domestic scales.

Source: [88]

Linking LUP and regulation to economic development results in land use management that promotes potential positive effects and/or neutralizes negative effects (see Box 12) rather than simply reducing government interventions in land development, or trying to articulate one-size-fits-all land use policies [86].

Box 12: Improving economic and environmental performance through planning land use change

Planning can anticipate and sustainably manage land use changes. This is the case of a participatory catchment LUP undertaken in New Zealand, following pre-established economic and environmental goals. A multi-stakeholder catchment management group decided that sustainable farming systems should meet criteria of: a) matching enterprise and stock class to land capability; b) improving erosion control; c) reducing sedimentation and nutrient contamination of waterways; d) minimizing the effects of human and livestock access on landscape and water quality; e) controlling pests and diseases; f) enhancing landscape values; g) improving return on capital; and, h) maintaining management flexibility. The outcomes of the planning process (which adopted these criteria through a consensus of stakeholders) projected a six-fold increase in economic farm surplus, a decrease in sediment, nutrients and other water contaminants, and a 40% decrease in soil erosion (see table below).

Goal	Indicator	Current	New plan	Time frame
Business viability	Economic farm surplus	\$34,000	\$200,000	30 years
	Enterprise profitability	\$308 ha ⁻¹	\$517 ha ⁻¹	2–3 years
	Stock performance	8.8 SU ha ⁻¹ 126 kg meat ha ⁻¹	14.7 SU ha ⁻¹ 367 kg meat ha ⁻¹	2–3 years
Ecosystem health	Suspended solids in water	1819 kg ha ⁻¹ year ⁻¹	1177 kg ha ⁻¹ year ⁻¹	30 years
	Plant nutrients in water	0.48 kg P ha ⁻¹ year ⁻¹ 4.93 kg N ha ⁻¹ year ⁻¹	0.36 kg P ha ⁻¹ year ⁻¹ 3.88 kg N ha ⁻¹ year ⁻¹	30 years
	Water temperature	23°C daily max.	17°C daily max.	20 years
	Aquatic invertebrates	MCI: 102	MCI: 118	15 years
	Erosion levels		40% decrease	15 years

Expected outcomes of the new LUP of the catchment farms were analyzed via a number of key performance indicators (see table below). The 'new plan' leads to an increase in profitability of 70%, in a 2–3 years timeframe, while simultaneously decreasing erosion.

Source: [89]

4.5 Land use planning: a tool to strengthen land governance:

Good governance is required for the effective coordination of policies between different sectors and policy levels. In other words, this entails multi-level governance, with horizontal coordination of sector administrations and policies, vertical coordination of different levels of responsibilities, as well as the inclusion of public participation [9]. These are all key factors associated to best practice of LUP. Best practice of LUP (including spatial planning) improves land governance in the following different ways:

4.5.1 Land tenure security is increased, and customary land tenure of communal lands, clarified

(see Box 13 – Lao and Box 8 –Tanzania). In Tanzania, PLUP at the village level, and between villages, has ensured that the land tenure security and rights to resource access of pastoralists, agro-pastoralists and crop farmers, are negotiated and protected. Wide community involvement in planning has also promoted a more open and transparent process, strengthening local level decision-making, through institutional capacity-building at the district and village levels.

Box 13: Participatory rural LUP to increase tenure security and resolve land use conflicts:

The Land Use Planning and Land Allocation (LUP/LA) programme has been implemented in Laos since the early 1990s. LUP/LA is seen as a tool to increase land tenure security, while in tandem encouraging agricultural intensification, private investments, and the development of commercial on-farm productions. Improved LUP and land allocation contribute to the stabilization of shifting cultivation and to the preservation of the country's forests, soils, biodiversity, and water resources.

The central government recognizes customary rights to use natural resources, and invests local institutions with important responsibilities, such as land distribution and registration, tax collection, land use monitoring, and conflict resolution. Furthermore, the government has stated that LUP activities should take place at the scale of sub-district units (i.e., village clusters).

Benefits brought about by the process:

- Participatory contribution enabled, with regard to planning land uses around a key PA, and wildlife corridors.
- Participatory contribution enabled, as relates to clarifying customary arrangements, reaching agreements and declaring village/cluster village boundaries.
- Creation of a negotiation platform for engaging local communities in PLUP.
- Resolution of conflicts relative to the use of communal lands.

Reflections / lessons learned

- The legitimacy of PLUP outputs needs be considered at both local and national scales. A successful bridging approach is required, so that policies are pertinent at the national level, whilst also being supported by local authorities (vertical articulation).
- Obstacles for genuine participation are: inadequate learning tools for local communities, so that they gain a better understanding of the land issues at stake; land use planners' limited facilitation skills for engaging local people in an open negotiation process; limited efforts for assessing the quality of participation; complexity in achieving gender balance. Ensuring local claims, knowledge, and institutions are given greater consideration is expected to bring about more balanced and environmentally sound development trajectories.
- Approaching PLUP from a sub-district perspective is expected to mitigate inter-village conflicts and support collaborative management between villages of the same village cluster.
- Building trust between planners and community members is essential for producing realistic land use plans, which villagers can refine and adapt. By negotiating land use plans and development scenarios, participants reach an agreement on a spatially-explicit landscape management plan, with a high degree of ownership.
- Being realistic is a necessary condition for a plan's actual implementation.

Source: [25, 80]

4.5.2 Multi-stakeholder participation enables inclusion of society's current and future needs into decision-making over the use of land [3]. It also provides a negotiation platform capable of engaging local communities in a more participatory version of LUP, as evidenced in Tanzania, Lao (Box 13), Ethiopia, and Mexico. Stakeholder participation, creation and training of citizen boards and commissions, appeal courts, and inter-jurisdictional agreements as part of LUP processes all contribute to improved land governance [60].

4.5.3 Transparent LUP contributes to redress past spatial and regulatory imbalances. For example, the Spatial Planning and Land use Management Act of South Africa (Annex 2.6) articulates a system of spatial planning and land use management for the country, providing a functional working environment to redress the imbalances of the past and promote social and economic inclusion.

4.5.4 LUP is a key instrument for reconciling competing interests in land, as well as preventing and/or resolving land use conflicts. For instance, one objective of the Mexican national ecological LUP programme (Annex 2.8) is to minimize environmental conflicts resulting from sectoral land use, by means of appropriate and balanced LUP, coordinated by the federal administration agency, SEMARNAT [63]. Likewise, participatory village land use plans are a policy instrument for the sustainable management of communal lands in Laos (Box 13). In Tanzania, a Joint Village Land Use Plan (JVLUP) – and supporting natural resource management sector plans – provides a formal framework for the sharing of resources. This type of LUP strengthens land governance by legitimizing the use of shared resources, and in tandem reducing potential land use conflicts (Box 8).

A multi-functional perspective towards LUP can address land use conflicts in community forests, as evidenced, for instance, by a multiple-use forestry planning policy adopted in Northern Bolivia to address land use conflicts of timber and Brazil nut management. In this region, the extraction of timber and economically important non-timber forest products (NTFPs), such as Brazil nuts, occurs in the same forests, creating opportunities for integration of management decisions and planning [59].

The absence of well-thought-out, integrated LUP and policy weakens land governance. For instance, Kenya has experienced the encroachment of settlements and agricultural areas into PAs, pushing wildlife into ever smaller and drier areas[90]; this has been exacerbated by sectoral laws of LUP (urban lands, agricultural lands, wildlife and forest conservation, Box 14) thereby resulting in inadequate land governance. LUP, and the exercise of property rights to land hosting wildlife resources, by different holders, need better coordination, so as to balance the diverse interests of all stakeholders and ensure SLM.

Such a balance can only be achieved through multi-sectoral cooperation of different government departments [90].

Box 14: Land use, land tenure and sustainable wildlife management in Kenya

The Physical Planning Act of Kenya, passed in 1996, makes provision for the preparation and implementation of physical development plans. Development, for the purposes of the act, is defined to include the making of any material change in the use or density of any land. It prepares a physical development plan, complying with the requirements of the Physical Planning Liaison Committee, a prerequisite for any land development in the country. Two kinds of physical development plans are provided for: namely, regional and local. Among the purposes of the regional and local physical development plans, is to ensure suitable regulations are in place when it comes to the use of land. These regulations and conditions for land development can include requirements relative to sustainable resource management. The act does not, however, address the issue of sustainable biological diversity conservation and management, which has been of concern for some years in Kenya. Furthermore, it uses existing local authorities – which are based on political as opposed to ecological considerations – as units for management. Consequently, the law does not define new parameters for zoning the country based on sustainable resource management imperatives. It also falls short of providing for area plans based on compatibility of land uses. Source: [90]

4.5.5 LUP can help to identify local peoples' use and possession rights over land and prepare for their formal recognition (legalization)[3]. This is shown, for instance, in the rural PLUP processes in Laos, Ethiopia and Tanzania. In this last, certificates of customary rights occupancy for shared grazing areas are granted to pastoralists as result of preparing and registering grazing land management plans (Box 8).

5. CONCLUDING REMARKS

Twenty-five years ago, Agenda 21 – a comprehensive action plan to be carried out globally, nationally and locally, by organizations of the United Nations system, governments, and major groups relative to each area in which humanity impacts the environment – rightly pointed out that integrated physical LUP and management is a practical way to move towards more effective and efficient use of land. *“By examining all uses of land in an integrated manner, it makes it possible to minimize conflicts, to make the most efficient trade-offs and to link social and economic development with environmental protection and enhancement, thus helping to achieve the objectives of sustainable development. The essence of the integrated approach finds expression in the coordination of the sectoral planning and management activities concerned with the various aspects of land use and land resources”*. [95]

5.1 Opportunities of LUP for SLM

This background paper presented evidence and lessons of best practice of LUP for sustainable land use and management. It is concluded that LUP can:

- Reconcile conservation and development objectives;
- Protect biodiversity, preventing loss of ecosystem services. Biodiversity conservation can be addressed through strategic and statutory multi-scale planning, at national, regional and local levels. It is important that biodiversity conservation be addressed early on in the LUP process, and carried through each stage of planning to on-ground management [7].
- Clarify customary land tenure in complex landscape mosaics;
- Resolve land use conflicts; potential conflicts between sectoral interests and between potential uses [9].
- Plan future land uses, accelerating, inter alia, the transition from subsistence to market-oriented agriculture in rural and remote areas.
- Improve land management in communal rangelands; for instance, by supporting village and district LUP and rangeland management that take the much needed mobility of pastoralists into account.

Though participatory approaches are essential to LUP for SLM, there are nonetheless a number of shortcomings. Notably, that processes can become highly dependent on the experience of individual implementers and projects, shifting the planning process away from well-designed land use master plans, which include the spatial allocation of land uses within a coherent national development plan – to broad guideline frameworks, driven instead by market forces, and tailored to manage current economic scenarios [49].

Furthermore, participatory planning processes require more time than conventional top-down planning, because of the consultation and negotiation process by the actors involved. The recent use of PLUP in pastoral areas of Ethiopia (Box 1) also points to challenges of stakeholder engagement: *“The participatory approach demands that government works closely with local land users... It demands working within different socioeconomic and ecological contexts with a diverse set of actors, which requires good facilitation and negotiation skills. It requires problem-solving and the drawing of conclusions based on information from different sources – something that is challenging to achieve for all actors”* [19]. However, this approach fosters ‘ownership’ of outcomes, usually making stakeholders far more willing to implement and maintain them [79].

Implementation strategies of LUP can include social programmes to compensate for exclusion from PAs, or to encourage investments into non-agricultural income activities, such as eco-tourism or communal forest management. Frequent among these are the integrated conservation and development projects (ICDPs) that combine rural development with biodiversity conservation goals. NGOs are often lead actors in designing and implementing ICDPs in partnership with local and/or national government agencies, as in the case study of Central American countries [60].

5.2 Remaining challenges of LUP for SLM

Enforcement mechanisms are necessary, not only legislative good intentions. Case studies of Argentina, Mexico and Indonesia, for instance, show that pieces of legislation related to comprehensive national LUP are potentially far-reaching, if fully implemented by the federal government, states, and municipalities. However, mechanisms of enforcement, including those relative to capacity-building, are essential for the full implementation of planning instruments. The Mexican Constitution and General Law of Ecological Balance show legislative intention for LUP instruments to be used in an integrated and coordinated fashion, to effect constitutional goals of environmental protection and social development, in urban and rural areas. However, there is a need for financial, legal, and technical support to coordinate human activities with the environment [62, 91]. Likewise, in Argentina, the comprehensive LUP law (General Environmental Law) has been virtually limited to a chapter of administrative law regulating development in an urban context, mainly concerned with zoning issues, occupation densities, and permitted uses. Enforcement has tended to be lax, in part because LUP itself has not been perceived to be of importance for policymakers. Better legal and economic instruments for the successful implementation of such a comprehensive land use system need, thus, to be effected [1].

Similarly Indonesia's spatial planning law specifies sanctions for spatial plan violations, however the government has fallen short of imposing sanctions against the conversion of green areas in the Jakarta metropolitan area (where only 9% of the urban area is used as open space, despite the law requiring it be at least 30%). Technical and legal training, as well as adequate operational budgets for spatial plan inspections are needed at the sub-district and neighborhood levels to enhance enforcement [92].

It is often difficult to value the environmental benefits of LUP for sustainable land use and management in rural areas. Case studies of Argentina and Mexico, for instance, suggest that benefits of land use regulation are less easily perceived in rural areas (e.g., agricultural land). This is partly because, in rural areas, many land use restrictions imposed relate to the protection of common and intangible goods (e.g., safeguarding biodiversity; ecosystem services, or the preservation of water quality). Benefits derived from ecosystem services, although widely recognized, do not easily translate into a concrete economic value for the landowner bearing the burden of regulatory restrictions. Therefore, rural landowners are often reluctant to bear restrictions and land use regulations that impose direct costs upon them, such as the loss of productivity, with no direct benefits other than those related to good environmental citizenship.

LUP must promote multi-sectoral coordination and land use efficiency through sectoral trade-offs. Policy decisions shaping land use need to include trade-offs between sectoral interests, including industry, transport, energy, mining, agriculture, forestry, recreation, and environmental protection and conservation. A comprehensive and integrated land use policy approach that accounts for trade-offs between many sectoral, social and environmental issues is largely absent, for instance, in the European Union; this absence, in turn, creates land use conflicts⁵. Trade-offs can be established through integrated land use and spatial planning, as well as targeted policy instruments such as PA networks [9].

⁵ For instance, the territorial conflicts between: hydropower generation, the goals of the Water Framework Directive; the indirect land use effects of bioenergy production; the effects of wind power generation on landscape and impacts on bird life; and - at a larger scale - the urban sprawl phenomena and the goal of polycentrism [1].

Integrated programmes for LUP, regional development and management are needed. SLM must be advanced via the integration of cross-sectoral policies (e.g., land use, energy and water management) into a single planning instrument, at the regional level, based on an understanding and acknowledgment of territorial dynamics. **Enhanced multi-level governance is key.** Land governance must be of the sort that promotes horizontal coordination of sectoral administration and policies, vertical coordination of different administrative levels, and includes public participation for multi-sectoral coordination. The lack of horizontal (sectoral) and vertical (institutional) coordination and integration of policies (in addition to weak LUP) has been identified as a driver of urban sprawl in Europe[93]. City boundaries are becoming diffuse, increasing the complexity of determining which levels of government are responsible for land (e.g., intermediate metropolitan administrations). Local and regional administrations can be effective in LUP and management, as well as in preventing and solving spatial conflicts. The local level has a strong role in LUP, ensuring the monitoring of land use changes and consistency with spatial planning.

Accessible and efficient knowledge bases are needed. LUP based on good soil information is important so as to achieve the sustainable use of soil and land resources - one of the ultimate aims of these policy processes. Access to reliable soil information for land capability or land suitability assessments is, thus, needed for land to be managed within its capabilities, avoiding degradation. This requires an understanding of the inherent properties of land, and of their spatial distribution at appropriate scales. Planners rely on user-friendly information interpreted from land capability mapping to suit their needs. A good example of such mapping put to use, is the identification of high capability land for irrigated agriculture; once identified, it can be protected from subdivision and potential changes in land use. This can occur in local, regional, or national LUP [94]

Better promotion of public and private investments for the establishment and management of social and LUP is needed. Economic and tax incentives are needed for individuals and public or private organizations to use their lands for conservation purposes.

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ANNEX 1: METHODOLOGY

Multiple electronic databases (Web of Knowledge, SCIRUS, SCOPUS, Google Scholar) were searched using a range of Boolean terms, in English and Spanish. Searches were performed in June and July 2016 on the complete range of references available at that time. Search terms were as follows: *land planning, spatial planning, land use planning, territorial planning, regional planning, sustainable land use, sustainable land management, land zoning, ecosystem-based, land allocation, agro-ecological zoning, planning process, territory, policy, instrument*, peri-urban, urban, landscape, multi-functional, participatory, stakeholder*, restoration, rehabilitation*. Search terms in Spanish were: *ordenamiento territorial, planificación, ordenamiento territorial ecológico*. The keyword search returned over 700 references imported into EndNote; titles and abstracts were examined, and relevant papers clustered into thematic categories. Through the search of abstracts, relevant papers were identified to define key criteria that land use planning (LUP) approaches and/or tools for sustainable land use management should meet. These criteria were used to identify papers that

could make relevant case studies of best planning policies and practice. Case studies were selected based on key criteria and a combination of geographic location (i.e., at least one case study per continent), domain (i.e., rural, urban, peri-urban), and administrative/spatial scale (local, state, regional, national). A template was devised for the systematic analysis of selected case studies (Annex 2), and cross-case analysis was applied to look for patterns and linkages within and between case studies, as well as for limitations to the planning approaches, best practice and lessons learned.

One aspect of the literature review focused on identifying key definitions of LUP, including its evolution within the context of sustainable land management (SLM); this analysis helps to better assess the extent to which different planning approaches diverge, and whether or not they can be useful, when identifying and promoting sustainable land use options.

2.1 LUP IN WESTERN AUSTRALIA⁶

Policy: The Planning and Development Act 2005 (P&D Act)

Criteria of best practice identified⁷: vertical integration; effective and linked institutions at local, regional and national levels; multi-sectoral coordination (horizontal integration); a set of planning procedures applicable at different scales; clear objectives; legally binding land use plans; aims at sustainability, balancing social, economic and environmental needs; stakeholder engagement; realistic and oriented to local conditions; links land use planning and nature conservation laws; future-oriented.

⁶ The State of Western Australia covers an area similar to that of Kazakhstan, or Algeria, being thus larger than each of the following countries: Saudi Arabia, Mexico, France, and Kenya.

⁷ Underlined are criteria of best practice with strongest evidence in the case study

Focus

The main purposes of the P&D Act – the principal piece of legislation governing LUP and development in Western Australia – are to: (i) establish the Western Australia Planning Commission (WAPC); (ii) provide for the preparation of state planning policies, regional planning schemes, and local planning schemes; (iii) control subdivision and development; and, (iv) provide for the acquisition of land.

	Legislation	Strategic Planning	Spatial Planning	Statutory Planning	Applications
State	P&D Act 2005 TP Regs 1967 DAP Act 2010 DAP Regs 2011	State Planning Strategy State Planning Policies DC Policies Guidelines and Manuals Planning Bulletins			
Region	MRA Act 2011	State Planning Policies DC Policies Guidelines and Manuals Planning Bulletins	Regional Planning and Infrastructure Frameworks (incl. Directions 2031)	Region Planning Schemes Regional Interim Development Orders	
Sub-region	Swan & Canning Rivers Act 2006	State Planning Policies DC Policies Guidelines and Manuals Planning Bulletins	Sub-Regional Structure Plans		
Local Government		Local Planning Strategies Local Planning Policies		Local Planning Schemes Local Interim Development Orders	
District	Perry Lakes Act 2005 Hope Valley Wastewater Act 2000 Swan Valley Act 1995		District Structure Plans	Local Interim Development Orders Improvement Plans & Schemes	
Locality	State Agreement Acts		Local Structure Plans (incl. Activity Centre Plans)	Improvement Plans & Schemes Planning Control Areas	Subdivision
Street/lot			Local Development Plans		Subdivision Development
Other	EP Act 1986 Heritage Act 1990 Contaminated Sites Act 2003 Mining Act 1978		Note: Certain planning instruments may in some cases fall within more than one column eg Local Structure Plans and Local Development Plans are spatial documents but often have statutory weight		

Figure 1: Overview of Western Australia's centralized planning system

Background (socio-political and legal context)

The Western Australian planning system has served the state for some fifty years. The system is based on a unique combination of stable institutional arrangements, namely: strong legislation; **centralized** statutory regional planning; subdivision control; supervision of local planning; dependable funding for metropolitan improvement; and a statutory authority to exercise powers, allocate resources and provide advice based on the expert professional support of a department of state.

The Department of Planning (DoP) and the Western Australian Planning Commission (WAPC) work together on planning issues where WAPC powers and resources are employed in accordance with their policies, and with those of the state government. The DoP provides the professional planning and administrative support to achieve the state government and/or WAPC's desired outcomes. Planning legislation is influenced by the Environmental Protection Act, of 1986; the Heritage of Western Australia Act, of 1990; and the Contamination Sites Act, of 2003.

Implementation

The State Planning Framework describes the different components that are instrumental in the implementation of the P&D Act. It comprises planning policy and statutory documents to guide decision-making and ensure appropriate development outcomes. The planning strategy is based upon six principles: community (diverse, affordable and safe communities); economy (facilitation of trade, investment, innovation, employment and community betterment); environment (conservation of the state's natural assets through sustainable development); infrastructure (ensuring infrastructure supports development); regional development (building the competitive and collaborative advantage of regions within the state); and governance (building community confidence in development processes).



Figure 2: Western Australia State Planning Framework

The State Planning Framework promotes strong multi-sectoral coordination (vertical and horizontal integration); in this way, water issues have been clearly established as a relevant planning consideration (given water as fundamental to both human life and the environment). State planning policy establishes broad guidance on the matters that should be considered in planning strategies, schemes and decision-making at the local level. This includes, for instance, matters relating to wetlands, waterways, floodways, drinking water sources, and drainage; such guidance is additionally supported by supplementary water-related policies (e.g., on water resources, public drinking water sources). Likewise, state policy is responsible for agricultural and rural LUP, as well as coastal plain catchment planning, both of which need to occur in consultation with the Department of Agriculture and Food (DAFWA)

Approach

Strategic planning documents are developed and implemented by both the WAPC and local governments, providing guidance on planning, land use and development matters. Strategic spatial plans are an integral part of the planning process. They provide a framework for the coordinated provision of services, infrastructure, land use and development, and provide a guide to the intended pattern of future development of any given area. At various scales, they help guide state and local government decision-makers in the assessment of rezoning, subdivision and development applications.

The P&D Act provides responsible planning authorities and the Minister for Planning with the power to enforce the provisions of primary and subsidiary planning legislation, including interim development orders and planning schemes. The nature of, and penalties for, the various offenses listed under the planning legislation, are established in the P&D Act.

Local governments have the power to enforce the provisions of their local planning schemes, and any decisions made under the aegis of such schemes. This not only includes the requirements for development and conditions of approval, but also the requirement to obtain planning approval prior to commencement of development or use of land.

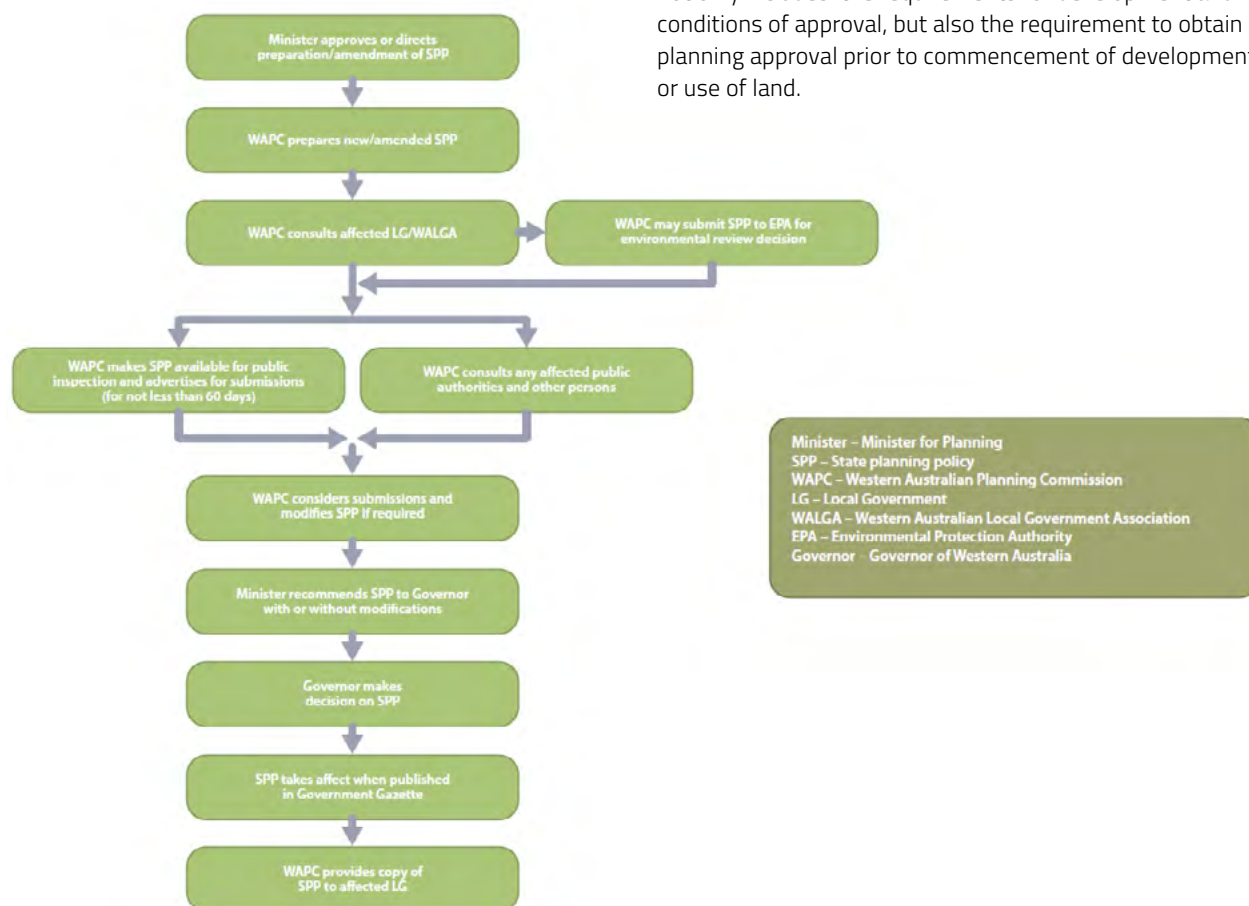


Figure 3: Western Australia approach to State planning

Public consultation is an important part of the planning process, and LUP guidelines call for consultation with community, relevant agencies and stakeholders (i.e., it is recommended that all these actors be consulted, following an appropriate consultation plan). In this way, by means of an e-consultation page, citizens can share thoughts and opinions on a range of proposed policies and plans before they are finalized.

Contribution / Impacts

LUP instruments have the ability to significantly influence the conservation of biodiversity in Western Australia. LUP contributes to SLM by: protecting land of agricultural significance from urban and peri-urban encroachment; protecting basic raw material resources from urban and peri-urban encroachment; preventing or limiting exposure of acid sulphate soils; rehabilitation and/or avoidance of contaminated sites; adaptation to salinization and rising groundwater levels; ensuring land use reflects land capability; protecting the quality and quantity of ground water supply sources; protecting water quality and minimizing erosion through water-sensitive urban design; minimizing eutrophication and other pollution of surface and groundwater; creating appropriate buffers between development, coastal estuaries, and water foreshores; floodplain management; preventing or limiting vegetation clearing; protecting natural habitat from destruction and fragmentation; preservation and enhancement of ecological corridors; reducing car dependence by transport demand management; accounting for sea-level rise, and increased storm surge, arising from coastal development.

Limitations / Reflections / Lessons

The Western Australian LUP system faces a number of limitations with regard to the achievement of SLM; these may, of course, also be viewed as opportunities for improvement. Key limitations of the LUP system that need addressing if SLM outcomes are to be achieved, include: the complex and tiered approval process; the long time frames involved when planning frameworks need to be amended; and the reliance on the change of land use to trigger new requirements. Triple bottom line measures are needed to effectively integrate land resource management into planning, including placing true value on biodiversity, and ensuring long-term planning is undertaken so true costs are reflected, and accountability is guaranteed. Regional planning projects highlight the limitations of local governments and catchment groups. These include lack of resources (time, staff and funding), as well as inadequate data access (incomplete, non-centralized and often non-existent). These lacunae limit how far officers can implement natural resource management protection through planning.

Key opportunities for improving SLM through LUP include: clarification of roles and responsibilities of the Planning Commission and the Environmental Protection Authority with regard to natural resource management in LUP; incorporation of SLM considerations as early as possible in the LUP process; application of strategic planning at regional scales; integration of SLM into local planning strategies and schemes; better guidance for implementation of natural resource management policies; and whole-of-government involvement in strategic planning.

Source: [1-3]

2.2 LUP IN OREGON STATE – SUB-NATIONAL – URBAN/PERI-URBAN DOMAIN

Policy: Land Conservation and Development Act (1973)

Criteria of best practice identified⁸: vertical integration; effective and linked institutions at local, sub-national and national levels; multi-sectoral coordination (horizontal integration); a set of planning procedures applicable at different scales, applies a 'light' methodology; legally binding land use plans; aims at sustainability, balancing social, economic and environmental needs; stakeholder (civic) engagement.

Focus

The Land Conservation and Development Act of 1973 requires all cities and counties of the State of Oregon⁹, in the US, to prepare comprehensive land use plans consistent with 19 planning goals. The goals express the state's policies on land use and related topics, such as citizen involvement, housing, and natural resource use; they include the orderly and efficient transition of rural lands to urban uses, the protection of forests and agricultural lands, and the protection and conservation of natural resources and open spaces.

In pursuing these goals, cities and counties are required to focus *new development within urban growth boundaries*, and restrict development outside of urban growth boundaries by zoning those lands for exclusive farm use, forest use, or as exception areas. Some development within forest and farm use zones can be approved by local authorities and must be reported to the Land Conservation and Development Commission.

Background (socio-political and legal context)

Oregon's LUP programme has been cited as a pioneer in US land use policy for its statewide scope. The programme was a response to rapid population growth in western Oregon during the 1950s and 1960s, which raised concerns about loss of forests and farm land to development. At the time, legislation had already authorized local governments to manage urban growth, however the residential development of forests and farm lands outside incorporated cities often remained unplanned and unregulated. In response, Oregon's legislature enacted the Land Conservation and Development Act, in 1973. The programme has experienced periodic changes in laws and policies to correct perceived problems.

⁸ Underlined are criteria of best practice with strongest evidence in the case study

⁹ Oregon State is slightly larger than the United Kingdom or Ghana.

The planning laws apply not only to local governments but also to special districts and state agencies. The laws strongly emphasize coordination, and consistency between state and local plans, programmes, and goals.

The programme fosters citizen involvement and participation, appropriate to the scale of the planning effort.

Implementation

A Land Conservation and Development Commission (LCDC) oversees the programme. Local comprehensive plans must be consistent with the statewide planning goals (e.g., natural resources must be considered in developing land use plans). When LCDC officially approves a local government's plan, it then becomes the controlling document for land use in the area covered by that plan. Most planning goals are accompanied by voluntary guidelines that suggest how a goal may be applied.

Approach

Goal 2 of the Act provides a set of guidelines for the preparation of plans to oversee land use decisions, including comprehensive and single purpose plans of cities, counties, state and federal agencies. Goal 5 (on natural resources) states that each city and county shall conduct an inventory and document presence and quality of wetlands, streams, fish and wildlife habitat, open spaces, archaeological resources, aggregate resources, historic sites, etc. Local governments must subsequently determine which resources are significant, and analyze the consequences of their conservation - or lack thereof. If and when conservation is decided upon, local governments must then develop appropriate conservation programmes. The inherent flaw of this process is, however, that it provides local governments with an opportunity to *decide not to* protect natural resources.

Contribution / Impacts

The existing body of research evaluating the effects of forest and farm land conservation undertaken by Oregon's LUP programme suggests that it has resulted in a measurable degree of success, in terms of protection, since its inception, in 1973.

LUP has succeeded in containing the expansion of urban areas, and helped to maintain large tracts of commercial forest and farmland, consequently providing some secondary natural resource benefits to water quality and wildlife. However, it appears the system creates barriers to the protection and restoration of habitat, as well as to overall watershed health, especially within urban growth boundaries.

Limitations / Reflections / Lessons

Oregon's planning programme has enjoyed legislative and citizen support since its inception; tensions arose, however, between advocates of the system – who see LUP as necessary for the long-term conservation of both forests and farm lands – and detractors, who argue that land use regulations unduly burden private landowners. The programme's most significant perceived limitations are: that it is too prescriptive and inflexible; that it unfairly impinges on private property rights; that, having been adopted thirty-five years ago, it fails to reflect today's changed economic and social environment; that it lacks a mechanism for critically engaging with new ideas; and that structural imbalances have led to partial or piecemeal protection of local ecosystems in urban areas.

Several *structural problems* of the land use planning system weaken its *efficacy* with regard to the *protection of lands containing high-value natural areas and ecosystems*. These deficiencies include that: the protection of natural resources is scattered amongst at least four different planning goals, each promoting isolated rather than comprehensive land use alternatives; some goals are *process-oriented rather than outcome-oriented*, hence their effectiveness depends largely on local leadership and political will, which leads to mixed results; current goals fail to address the restoration and rehabilitation of degraded ecosystems. Local communities benefit from a significant degree of latitude when it comes to determining levels of environmental and natural resource protection; this is both a strength and a weakness of the current planning system. Gosnell et al. [4] propose the following steps to address the system's current shortcomings:

- Clearer, more specific objectives for the protection of natural resources are needed (i.e., specific outcomes); greater emphasis and focus *on comprehensive* natural resource planning is required, which can be achieved by a LUP reform.
- Greater *spatial tracking* and evaluation mechanisms of forest and farm land lost to development is needed, so as to better differentiate between planned and unplanned loss, both within and outside urban growth boundaries.
- Greater tracking and evaluation of the *quality of forest and farm land* lost to development is required, based on soils analysis, and other topographic information.
- Greater utilization of *spatial land use data* to examine how development affects the viability of forestry and farming, as well as to examine related environmental mitigation effects resulting from LUP.
- Analyses of quality-of-life factors (i.e., factors beyond economic aspects), which the planning programme has influenced via forest and farm land conservation measures, should be taken into account.

Sources: [4-6]

2.3 LUP IN CHINA – NATIONAL SCALE

Policy: Land Administrative Law of the People's Republic of China (LAL), formulated in 1986, amended in 1998 and 2004.

Criteria of best practice identified: vertical integration; effective and linked institutions at local, sub-national and national levels; multi-sectoral coordination (horizontal integration); a set of planning procedures applicable at different scales; clear objectives; legally binding land use plans; aims at sustainability, balancing social, economic and environmental needs.

Focus: regulating land classification and zoning, resource preservation and the protection of the environment. Five principles underpin land use master planning: (1) strict protection of communal farmlands; (2) improvement of land use efficiency; (3) comprehensive mechanisms for managing various aspects of land use; (4) environmental protection and improvement, and ensuring sustainable land use; and (5) balancing the demand for land between the various competing uses.

LUP at the national level (i.e., land use master plans) is seen as a means of managing broad national interests involving land resources, and also providing the basis for the development of plans at other administrative levels (e.g., province, prefecture, etc).

Background (socio-political and legal context)

The Land Administrative Law provides the legal framework for the management of land resources; it contains strong provisions for the establishment of LUP and the protection of farmland, as well as explicitly addressing environmental protection. It promotes a *centralized* form of LUP; there are strict restrictions prohibiting the conversion of farmland into land for construction; moreover, any land use by a governmental unit, business or individual must adhere to the regulations on approved uses and parameters established in the land use master plans. The LAL promotes *vertical integration and multi-sectoral coordination*: all levels of government should supervise the establishment of the land use master plans, according to (1) the national economic and social development plan; (2) the requirements for territorial management, resource preservation and environment protection; and (3) land availability and productivity, including land demands for infrastructure projects.

Five administrative levels of planning match the five main levels of government: state, province (autonomous regions, and directly governed city regions, i.e., Beijing, Tianjin, Shanghai and Chongqing), prefecture (city), county and village. Each level of planning has to adjust to the scope and scale designated in the higher plans (*vertical integration*), and the level of detail increases from national plans to village plans.

Implementation

A two-tiered planning system: the Ministry of Land and Resources represents one tier and is responsible for the development of land use plans. A second tier groups sectoral planning systems responsible for the development of special land use plans (i.e., the Ministry of Housing and Urban-Rural Development is responsible for urban plans, and the Ministry of Transportation produces plans related to transport).

The LUP system is also divided into three main categories: master, special topic and project-oriented plan. Land use master plans, the core of the LUP system, are long-term (10 years on average) and legally binding. Special topic plans focus on *certain land use issues*, such as plans protecting arable land, land development plans and land recovery plans. Project-oriented plans involve detailed planning similar to project-design plans (e.g. detailed construction plans)

Approach

National land use master plans are produced every ten years. The supervision of land use master planning occurs at each of the five administrative levels. The Department of Land Administration is responsible for preparing plan documents and for organizing the overall process. The land use master planning process consists of five phases: (a) Project preparation; (b) Information collection; (c) Preparation of the draft plan (including analysis of the state of the land and land suitability, analysis of land demand and supply, determination of land use goals, development of land use options and alternatives, selection of best options through multi-stakeholder engagement); (d) Compilation of plan document; and (e) Acceptance of the draft plan (following a bottom-up approach; local government plans are presented to the level of government directly above them for approval).

Contribution / Impacts

The goals and contents of Chinese land use plans refer to the principles of environmental protection and sustainable development, and it may be said that LUP has contributed to the protection of the ecological environment of the country. However, there is still room for improvement: land use plans should consider environmental issues in a more comprehensive and systemic manner (e.g., through strategic Environmental Assessments).

Limitations / Reflections / Lessons

Since the inception of the LAL, three rounds of LUP have been undertaken in China. From an analysis of these, it may be considered that land use master planning currently faces the following challenges: (1) the rapid push towards industrialization and urbanization may result in the disregard of environmental considerations within the planning process; (2) lack of the flexibility in planning methodologies may lead to inequity; and (3) there is insufficient public participation within the process.

Moreover, although the LAL addresses the overall planning framework, comprehensive planning is often contradicted by sectoral planning of line ministries, such as forestry, agriculture and the poverty alleviation bureau, that also carry out their own local LUP.

Source: [7, 8]

2.4 LUP AND SPATIAL PLANNING IN THE EUROPEAN UNION – REGIONAL SCALE

Policies: a set of spatial planning policies influence the land use and management of the European Union, taken as a 'region'. The following are examples of best practice for SLM, territorial cohesion, and territorial development:

- a) European Spatial Development Perspective (ESDP) – (1999)
- b) Cohesion Policy 2014 – 2020 – (2014)
- c) European Territorial Agenda 2020 – (2011)

Criteria of best practice identified: effective and linked institutions at local, sub-national and national levels; multi-sectoral coordination (horizontal integration); a set of planning procedures applicable at different scales – i.e., subsidiarity; clear objectives; legally binding land use plans; aims at sustainability, balancing social, economic and environmental needs; multi-stakeholder engagement; territorial cohesion; spatial orientation; future-oriented.

Focus

European Spatial Development Perspective (ESDP): this is a non-binding framework, created in 1999, aiming at achieving a balanced and sustainable spatial development strategy. Its objectives align with the fundamental goals of European policy: a) *economic and social cohesion*; b) *conservation of natural resources* and cultural heritage; c) more balanced competitiveness of the European territory; d) development of a balanced and *polycentric urban system* and a new urban-rural relationship; e) securing parity of *access to infrastructure* and knowledge; and f) sustainable development, *prudent management and protection of nature* and cultural heritage.

Cohesion Policy 2014-2020: this relates to territorial Cohesion within the context of the EU spatial development. The concept of territorial cohesion was incorporated into the body of EU planning through the Treaty of Lisbon (2009) as a third dimension of the cohesion policy, aimed at strengthening economic and social cohesion. Territorial cohesion enables citizens to take full advantage of the EU's *territorial characteristics* by guaranteeing the harmonious development of the EU's diverse territories¹⁰. Viewing cohesion from a *territorial angle* calls attention to themes such as *sustainable development and access to services*. It also highlights that many issues are transboundary, and may require a coordinated response from several regions or countries, while others need to be addressed at a local or neighborhood level.

European Territorial Agenda 2020: this document pursues better coordination between the spatial policies of the member states by introducing a "European dimension" and defining and implementing common priorities. The aim is to improve coherence between EU policies and spatial development policies within member states (i.e., promoting a perspective of territorial cohesion). The policy aims to better understand the spatial system and territorial trends extant at the EU level, and to *improve vertical and horizontal coordination, as well as to increase participation* of private and public sectors towards a more *responsive territorial governance*.

Background (socio-political and legal context)

Patterns and trends in EU land use and land cover changes are *influenced by planning systems* adopted at the national level. There are a number of different approaches: centralized; decentralized; regional economic planning approaches (France, Portugal, Germany); comprehensive integrated approaches (Nordic countries and Austria); land management oriented approaches (UK, Ireland, Belgium); and urban planning focused approaches (Mediterranean countries). Although spatial planning does not fall within the scope of the EU's authority, initiatives such as the ESDP contribute to its framing on the national level.

The aforementioned European policies set the *framing conditions of LUP* by means of various strategies and instruments. LUP and management decisions are usually undertaken at the *local or regional level*. However, the European Commission also plays a role in ensuring member states take environmental concerns into account in their *land use development plans* (e.g., through devising methods and environmental tools to analyze the impact of proposed development, as well as by improving the planning, management and use of Europe's coastal zones, etc.).

The inclusion of the territorial cohesion dimension within EU LUP ensures spatial development is taken into account in European land policies. It leads to improved coordination amongst various spatial policies, and facilitates cooperation among the parties responsible for land use and development planning. In recent years, strategies for multilateral areas have also been considered, i.e., regarding the Baltic Sea coastal area, the Danube River area, etc.

¹⁰ Green Paper on Territorial Cohesion (2008)

Implementation

A recent analysis of planning policies and governance across EU countries (PLUREL project) focused on the functioning of the government system (fragmented/ consolidated) and the type of planning policy system (strong/ weak control; regional/ national level) as key factors influencing land use and its changes¹¹. The results show that Northern European countries (e.g., Denmark, the UK and the Netherlands) exhibit higher levels of control over land use change as result of their planning systems and consolidated local government systems. This also extends to Lithuania (with a tradition of strong planning inherited from the former Western Soviet planning institutions) and to Bulgaria (with a consolidated local government system). Southern European countries (e.g., Cyprus, Greece or Portugal), meanwhile, exhibited more fragmented local government systems, although stronger control over land use change occurring at supra-local levels.

Contribution / Impacts

The **ESDP** has resulted in: policy orientations for territorial balance and cohesion within the EU; improved competitiveness; an urban system with compact cities; a strengthening of partnerships between urban and rural areas; parity of access to markets and knowledge; and wiser management of natural and cultural resources.

The **EU Cohesion Policy 2014-2020** offers an effective framework for the better articulation and coordination of land use policies; structural and cohesion Fund investments are better organized between urban areas, rural areas, and the regions that can effectively manage urban sprawl.

The objectives of the **Territorial Agenda 2020** are addressed in regional and urban policies, and, to a lesser extent, also in environmental and transport policies. This occurs at all levels, but predominantly at the EU level. Awareness of this document is low in other policy areas, and at sub-national governance levels [9].

¹¹ The strength of the spatial planning policy was assessed by observing the degree of influence supra-local levels have on land use changes (e.g., by means of spatial planning at supra-local levels, importance of local plans or veto power on local decisions); it was seen that regional/spatial planning policy could have a weak level of control, a medium level of control, or strongly control spatial policies.

Limitations / Reflections / Lessons

Key challenges highlighted in the Territorial Agenda 2020 (e.g., biodiversity loss, geographically diverse impacts of climate change and environmental risks), are very much related to the way *land has been used and managed*. Although the EU Cohesion Policy 2014-2020 has already significantly reduced economic, social and environmental disparities within the EU, it has nonetheless been observed that it could be more effective, and that it could play a crucial role in the context of the current economic crisis; similarly, it could aid to guarantee compliance with the EU strategy 2020[10, 11].

Evidence provided in the European Land Use Patterns Project (EU-LUPA)[10] points towards the following lessons and challenges in territorial cohesion and *territorial development*:

a) The need for more integrated policy approaches

towards sustainable land use: European economies depend on natural capital, including “space”; the EU thematic strategy on the sustainable use of natural resources includes *space* as a resource. The term refers to areas of land and maritime space that are needed for production purposes (e.g., minerals, timber, food) and for various socio-economic activities. These interests are *often competing for the same territorial resource*. A more integrated, comprehensive and up-to-date policy approach is needed, to steer European territorial development towards sustainability through increased *land use efficiency and landscape multi-functionality*.

b) Policy decisions shaping land-use need to include

trade-offs between sectoral interests, including industry, transport, energy, mining, agriculture, forestry, recreation, and environmental protection and conservation. A comprehensive and integrated policy approach that accounts for trade-offs between sectors, taking social and environmental issues into account is largely absent in the EU. This absence, in turn, this creates land use conflicts¹². Trade-offs can be established through integrated land use and spatial planning, as well as by means of targeted policy instruments such as PA networks.

¹² For instance, the territorial conflicts between: hydropower generation; the goals of the Water Framework Directive; the indirect land use effects of bioenergy production; wind power generation impacts on landscape and bird life; and, at a large scale, the urban sprawl phenomena and the goal of polycentrism [1].

- c) More integrated programmes for LUP and regional development and management:** sustainable territorial management needs to be implemented and improved by the integration of cross-sectoral policies regarding land use, energy and water management. These must be merged into a single planning instrument at the regional level, based on an understanding of territorial dynamics.
- d) Enhanced multi-level governance:** (i.e., governance that promotes horizontal coordination of sectoral administration and policies, and vertical coordination of different administrative levels and public participation) for multi-sectoral coordination. The lack of horizontal (sectoral) and vertical (institutional) coordination and integration of policies, as well as weak LUP, have been identified as drivers of urban sprawl in Europe[11]. In addition, city boundaries are becoming diffuse, which increases the complexity of LUP, which finds itself shared between different levels of governance (e.g., intermediate metropolitan administrations).
- e) The need for upscaling urban planning policies and practices that have shown successful in restricting the sprawling expansion of built-up areas.** Urban growth matters, as it often occurs at the expense of agricultural or forest land. Urban sprawl has been identified as one critical negative impact of current models of territorial development. In developing integrated spatial planning within key EU policy frameworks (which make major contributions to policies combatting urban sprawl) *transport and territorial cohesion policies* are crucially important dimensions for the delivery of positive outcomes.

Sources: [10–12]

2.5 SPATIAL PLANNING IN DENMARK – NATIONAL SCALE

Policy: The Planning Act (2007)

Criteria of best practice identified: vertical integration, strongly decentralized; effective and linked institutions at local, sub-national and national levels; multi-sectoral coordination (horizontal integration); a set of planning procedures applicable at different scales – i.e., principle of subsidiarity; clear objectives; legally binding land use plans; interlinkage with financial planning; aims at sustainability, balancing social, economic and environmental needs; stakeholder engagement.

Focus

The Planning Act ensures that the country's overall LUP synthesizes both the interests of society with respect to land use, and contributes to the protection of nature and the environment; in this way, the *sustainable development of society*, as regards people's living conditions and the *conservation of wildlife and vegetation*, is secured.

Spatial planning aims towards the appropriate development of the whole country, including individual administrative regions and municipalities. This is based on overall planning and economic considerations. The method involves: creating and conserving valuable buildings, settlements, urban environments and landscapes; preventing pollution of air, water and soil, as well as noise nuisance; and involving the public in the planning process as much as possible.

Background (socio-political and legal context)

Since its inception in the 1970s, the Danish planning system has been characterized by three core principles, namely *decentralization*, *framework control* and *public participation*. Denmark has a simple and clear spatial planning system with a strongly decentralized division of tasks. Municipal councils are responsible for comprehensive land use regulation, at the municipal and local levels, with *legally binding* guidelines for property owners. Regional councils prepare strategic plans for spatial development in each region. The Minister for the Environment is responsible for upholding national interests by way of national planning.

The Planning Act stipulates minimum rules on *public participation*. The planning authority decides whether it should distribute more material for discussion, arrange citizens' meetings, establish working groups, create electronic citizens' panels, or the like. Municipalities experiment with various ways of involving the public, nongovernmental organizations and other organizations in the planning process.

Implementation

The Minister for the Environment establishes a comprehensive framework for regional spatial development planning and municipal planning through national planning reports, overviews of national interests in municipal planning, national planning directives, dialogue and other means. The Minister ensures, by way of a number of instruments, including veto power, that *municipal planning complies with overall national interests* (i.e., vertical articulation).

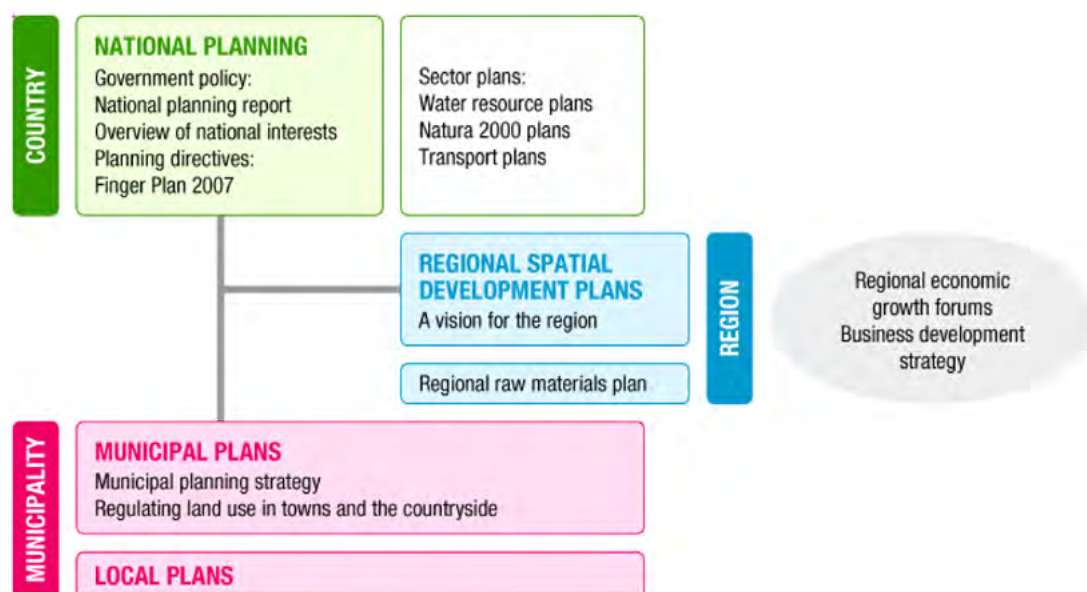


Figure 4: Approach to spatial planning in Denmark

Table 1: Summary of planning and land use policy instruments

Plan	Status and duration	Objectives, form and use	Production
<i>National planning reports</i>	Statutory reports providing general guidance and policies. Compulsory preparation after every national election.	Sets out the current national planning policies and provides guidance for regional and local planning authorities. Their rationale, scope and development orientation has varied widely over the past four decades (Galland, 2012a).	Prepared by the Ministry of the Environment and adopted by the government.
<i>National planning directives</i>	Statutory directives providing binding regulations on specific issues of national interest.	Sets out legal provisions on specific issues of national interest, e.g. determining the path for natural gas pipelines; the siting of wind turbines and electrical transmission lines.	Prepared and adopted by the Minister for the Environment. Binding for regional and local authorities.
<i>Overview of national interests regarding municipal plans</i>	Statutory reports prepared every four years.	To determine the interests and considerations arising from politically adopted decisions in the form of legislation, action plans, sector plans, national planning decisions and agreements between public authorities	Prepared by the Ministry of the Environment in cooperation with other relevant ministries. Binding for local authorities.
<i>Regional spatial development plans (RSDPs)</i>	Advisory, strategic development plans that describe the 'desired future spatial development' for each administrative region. Prepared every four years.	Portrayed as 'umbrella' tools for the inspiration of growth and development initiatives at the municipal level. In practice, RSDPs reject the aspiration to manage and control spatial development at lower scales (Galland, 2012b).	Framed to emerge from bottom-up, multi-stakeholder processes facilitated by the administrative regions in collaboration with municipalities and other regional actors.
<i>Municipal plans</i>	Statutory plans providing land use regulation. Compulsory revision every four years, covering the whole area of the municipality with a 12-year horizon.	Set out general and specific policies and regulations for land use in urban and rural areas. Main political instrument for development control at municipal level.	Prepared and adopted by municipal councils. Subject to public consultation at two formal stages: prior to preparing the plan proposal and prior to adoption. Binding for local authorities.
<i>Local / neighborhood plans</i>	Statutory plans providing binding regulations for local/neighborhood areas. Compulsory preparation prior to implementation of development proposals.	Set out detailed regulations for future land use, including written statements and maps to a scale between 1:500 and 1:5000.	Prepared and adopted by municipal councils. Subject to public consultation and objections for at least eight weeks prior to adoption. No possibility for appeals except for legal issues. Must comply with municipal plans. Binding for landowners.

Regional councils prepare regional spatial development plans that detail a vision for the region in question. This is a new type of strategic plan that captures the overall spatial development of the region and is closely linked with the business development strategy prepared by the regional economic growth fora (i.e., multi-sectoral coordination). Municipal councils summarize their objectives and their strategy for development in a municipal plan, which comprises a framework for detailed local plans, and for processing individual cases, pursuant to the Planning Act and to numerous additional acts governing other sectors.

Approach

Table 1 summarizes the planning and land use policy instruments adopted at different administrative levels.

Contribution / Impacts

The act pursues five goals for spatial planning: 1. Rural and urban areas should be distinct; 2. *Development should benefit all of Denmark*; 3. Spatial planning should be based on respect for the identity of cities, towns, city and townscape, as well as nature, the environment and the landscape; 4. Spatial planning and investment in infrastructure should be closely integrated; 5. Spatial planning should be comprehensive.

Over time, spatial planning has assumed different roles in contributing to manage growth and development in the country. For instance, Denmark has been constructing the axes of its national arterial railway and road network, called the “Big H” structure, since 1962; this is expected to greatly increase the connectivity between Denmark and central Europe.

Initial consolidation of the Danish planning system, and its subsequent implementation, were highly dependent on the steering role that spatial planning mechanisms and practices played in the course of their first three decades of existence. Substantial development reorientations of the late 1980s led spatial planning to adopt a balancing role, integrating the sustainability agenda with both steering and strategic objectives. Both these roles – balancing and *strategic* – have prevailed, to varying degrees, throughout the 1990s and 2000s. During most of the 1990s and early-to mid-2000s, spatial planning largely focused upon its strategic role, which resulted in the establishment of new conditions by which to address, inter alia, the challenges of the government’s globalization agenda [13].

Current local and regional administrations are effective in LUP and management, as well as in preventing and solving spatial conflicts. There are examples of responsible land use management, such as, for instance, a local initiative concerning the conversion of industrial sites into leisure activity areas, in Hedeland¹³. There is also a well-developed *monitoring system*, which consists in the periodic reporting of major land use changes *at the municipality level*, which need to be accepted by the local government and included into the municipal plan. The local level has a strong role in LUP, ensuring monitoring of land use changes and consistency with spatial planning.

¹³ Hedeland, a former 15 km² area of gravel and clay mining southern-west edge of Greater Copenhagen Region which has been transformed into a recreation area.

Limitations / Lessons learned

Galland [13] argues that the current planning system appears not to pay a great deal of attention to the integration and coordination policy strategies put forward by other sectors (i.e., the tasks and responsibilities associated with the now extinct regional plans). Now the system is more focused on interactions between various land use types, is more complex than sector planning before. The lack of strategic reasoning and geographical thinking appears to have reduced the possibility for spatial planning to have a say in present and future decision-making processes. In Galland’s [13] view, the current Danish planning system has less power than its predecessor to ensure their plans are truly effective. Shifts in national spatial reasoning (and associated policy) seem to be inherently linked with particular development trends that emerge over time. In this case, such tendencies have been influenced, respectively, by national (societal) needs (1960s/1970s) and international growth-oriented agendas (1990s/2000s). [13]

One of the key issues in Denmark’s national spatial policy is the planning of infrastructure: this particularly means the effort to construct bridges connecting mainland territory with islands, as well as linking national bridges and roads with international railway and road networks, so as to be better connected with other countries [12].

National spatial planning faces new challenges related to accelerated land use changes driven by the transition Denmark experiences from traditional-highly developed to more modern trends. This has meant a shift from phenomena such as urban sprawl, summer house area increase, transport corridor development, agriculture intensification, and reclamation of post-industrial areas – to an increasing significance of high-tech services, high-tech industry, and research activities [10].

Source: [12, 14] [10, 13]

2.6 SPATIAL LUP IN SOUTH AFRICA – NATIONAL SCALE

Policy: Spatial Planning and Land Use Management Act 16 (SPLUMA) (2013)

Criteria of best practice identified: clear formulation of objectives; legally binding land use plans; vertical integration; future oriented; participatory; recognition of stakeholders and their differing views; effective and linked institutions at local, sub-national and national levels; multi-sectoral coordination (horizontal integration); spatial orientation; a set of planning procedures that are applicable at different scales; interlinkages to financial planning; aims at sustainability, balancing social, economic and environmental needs.

Focus

The Act provides a framework for national spatial planning and land use management, including monitoring, coordination and review of the spatial planning and land use management system; it outlines the relationship between spatial planning, the land use management system and other kinds of planning. Additionally, it provides a framework for policies, principles, norms and standards for spatial development planning and land use management, as well as providing for inclusive, development-oriented, equitable and efficient spatial planning in different spheres of government. Furthermore, the Act addresses past spatial and regulatory imbalances, such as by the promotion of greater consistency and uniformity in application procedures and in decision-making by authorities responsible for land use decisions and development applications. Similarly, it provides for the establishment, functions and operations of Municipal Planning Tribunals, which are responsible for the facilitation and enforcement of land use and development measures. Efforts to achieve these objectives draw from five major principles, which include: sustainability, equity, efficiency, integration and good governance. This Act is applicable to both rural and urban domains, including as relates to infrastructure development.

Background (socio-political and legal context)

The Spatial Planning and Land Management Act came into force in July 2015, linking spatial planning with infrastructure development and sectoral planning. The Ministry of Rural Development and Land Reform provides logistical support to provinces and municipalities for its effective implementation. The Act addresses national land use management, land development policy, and urban planning issues. This includes: management processes; land use diagnosis and design standards; technicalities for graphic presentation and report writing; monitoring and evaluation methodologies for spatial planning and land use management.

A long-term spatial development vision statement and plan inform the preparation of frameworks primarily to address historical spatial imbalances in development. Municipal frameworks make provisions for implementation, and develop funding strategies. An adopted and approved land use scheme has *force of law*, and all land owners and users within the municipal area – including the municipalities themselves, state-owned enterprises and organs of the state – are bound by the provisions of the land use scheme.

All municipalities must establish Municipal Planning Tribunals to decide on cases, with the Municipal Council dealing with appeals on decisions made by the Municipal Planning Tribunal. The latter is made up of municipal officials with knowledge and experience of spatial planning, land use management and land development.

Implementation

Categories of spatial planning include integrated development plans, spatial development frameworks, and land use schemes. Spatial development frameworks, which are prepared and adopted by national, provincial and municipal spheres of government, need to be coordinated, aligned, and in harmony with each other (vertical integration), using *land use schemes* to guide spatial planning, land use management and land development.

Spatial development frameworks must outline specific arrangements for prioritizing, mobilizing, sequencing and implementing public and private infrastructure, as well as arrangements for land development investment. A *consultative participatory process* is followed, and executive municipal council approval is required; the framework takes legal effect upon its publication in the government gazette.

The *municipal spatial development framework* is prepared by the executive authority in coordination with the traditional councils. It considers the spatial form of the municipality, including development corridors, activity spines, and economic nodes where public and private investment can be prioritized and facilitated. Municipal land use schemes are a zoning and regulatory instrument for built-up and non-built up areas with special reference for the provision of affordable housing in residential land use development.

Regional spatial development frameworks are prepared in consultation with concerned municipal councils, and need to be consistent with environmental legislation, and provide basic guidelines for spatial planning, land development and land use management over the designated area.

Approach

Land use schemes need to be designed within the limits of environmental legislation to promote national and provincial policies relative to economic growth, social inclusion and efficient land development, with minimal environmental impact. Infrastructure planning is the control element for development in a heavily statutory environment.

The Act identifies and defines land use purposes (functions), including: agricultural, business, commercial, community, conservation, educational, government, industrial, institutional, mining, public, recreation, residential and transport.

Contribution / Impacts

The Act sets out to articulate a system of spatial planning and land use management for the country, providing a functional working environment to *redress the imbalance* of the past and promote social and economic inclusion.

Limitations / Reflections / Lessons

- The Act is a good administrative document, though it has certain shortcomings related to technical requirements (e.g., human capacity at the municipal level).
- The development principles appear more inclined towards spatial redistribution of population rather than restructuring land use in favor of generating new economic landscapes.
- Decentralized planning is fostered in the Act, however government agencies may lack formal expertise in managing planning decisions, especially plan evaluation.
- The ministerial powers the Act grants are well intended, though they have the potential to increase the vulnerability of planning to political interests, especially as regards plan implementation.
- It links spatial planning with environmental management and transport planning; this, however, challenges the preservation of the core elements of spatial planning, given that the approach is becoming project-oriented, and progressively becoming closer to infrastructure planning.

Source: [15]

2.7 LUP IN ARGENTINA

Policy: General Environmental Law 25676 (2002)

Criteria of best practice identified: *vertical integration*; effective and linked institutions at local, sub-national and national levels; multi-sectoral coordination (horizontal integration); a set of planning procedures applicable at different scales; clear objectives; legally binding land use plans; aims at sustainability, balancing social, economic and environmental needs; principle of subsidiarity.

Focus

The General Environmental Law lists **environmental LUP**¹⁴ as one of the instruments for environmental policy and management¹⁵. The law sets the principles and guidelines for implementing environmental policy, in that it requires national environmental policy to: ensure preservation, conservation, and improvement of the quality of environmental resources, both natural and cultural; promote the rational and sustainable use of natural resources; maintain the balance and dynamics of ecological systems; ensure the conservation of biological diversity; organize and integrate environmental information; ensure free access to environmental information by the population; *establish a federal system for inter-jurisdictional coordination for the implementation of environmental policies at regional and national scales*; establish procedures and adequate mechanisms for the restoration of contaminated environments [16].

Background (socio-political and legal context)

In Argentina, land use concerns have historically been viewed from an urban perspective, with little attention paid to the need for the integration of urban and rural planning, taking into account ecological conservation, landscape, socioeconomic factors, and factors related to natural resource use. Land use law evolved over time from simple restrictions on the right to develop private property to the more sophisticated urban and environmental planning procedures introduced at the end of the 1990s, depending on the political agendas and priorities of each jurisdiction.

In the 1960s, land use regulation was almost entirely confined to urban areas, with little or no attempt made to establish similar restrictions for land use in rural areas, or

to integrate environmental considerations into the planning system. Planning influenced by the urban context saw a wide acceptance of the concept of imposing restrictions on private property in order to further objectives in the public interest (e.g., amenities, neighborhood character or environmental quality). A different view dominates in rural communities and amongst farmers, where private property is seen as an absolute value, and farmers struggle to accept land use regulations that impose direct costs related to the loss of productivity with no clear-cut economic benefits.

Argentina's Constitution was reformed in 1994 and it includes, amongst other amendments, a right to a healthy environment (Article 41). The General Environmental Law, enacted in 2002, specifically requires the implementation of land use plans throughout Argentina. The Constitution, the General Environment Law, and related provincial laws dealing with land use or with the establishment of frameworks for the *integration of environmental and land use plans* provide a solid legal basis upon which to develop the laws and institutions for sensible, feasible, and comprehensive LUP in Argentina.

Implementation

The General Environmental Law consolidated a *federal environmental system* to coordinate environmental policy and sustainable development decisions among different levels of government. Article 9 sets out the implementation procedures, stating that national environmental planning structures the comprehensive functioning of the national territory by means of inter-jurisdictional coordination between: municipalities and provinces; provinces, the City of Buenos Aires¹⁶, and the nation (i.e., vertical integration). This coordination occurs through the Federal Council of the Environment (COFEMA for acronym in Spanish); COFEMA needs to harmonize the interests of different sectors within society, as well as the interests of these sectors and those of the public administration.

The *process of environmental planning* needs to consider a number of aspects: political, physical, social, technological, economic, legal, and ecological. This, in turn, must occur at the level of local, regional, and national realities. Planning must, additionally, ensure environmentally adequate use of natural resources, maximize production and utilization of different ecosystems, while minimizing degradation and misuse of resources, and promoting social participation in all fundamental decisions related to sustainable development.

¹⁴ In Spanish it reads '*ordenamiento ambiental del territorio*'; other translations refer it as 'environmental territorial planning' or in Mexico, ecological land use planning '*ordenamiento territorial ecológico*'.

¹⁵ Other instruments highlighted are: Environmental Impact Assessment; Environmental Control System for Anthropogenic Activities; Environmental Education; Environmental Diagnosis and Information Systems; and Economic Promotion Regime for Sustainable Development

¹⁶ The city of Buenos Aires attained full autonomy after the 1994 Constitutional reform, placing the capital on an equal status with the rest of Argentina's provinces.

Approach

The planning approach taken is centralized. COFEMA, the inter-federal agency, is tasked with the coordination amongst the various provincial environmental agencies and the federal environmental authorities. However, COFEMA lacks enforcement power and must rely on implementation by respective provincial administrations or by the federal secretariat. LUP focused on areas of different human activities and/or the development of human settlements, needs to consider the following factors: (a) Characteristics of each zone or region, taking into consideration the natural resources available, and the ecological, economic, and social aspects of sustainability; (b) Distribution of the population and its particular characteristics, (c) Nature and character of the different biomes, (d) Existing alterations in natural biomes due to human settlements, economic and other human activities, or natural phenomena; (e) Conservation and protection of significant ecosystems.

Urban environmental plans and provincial land use plans have provisions for community participation in the planning process (e.g., the urban environmental plan of the city of Buenos Aires, or the provincial land use plan of Mendoza). Such plans also aim to foster horizontal integration between government agencies. Provinces such as Buenos Aires use zoning as the basis for land use regulation. Municipalities develop local plans that need to be approved by the province before its enactment (i.e., vertical integration). Municipalities are required to consider regional development in neighboring areas as part of the planning process.

Contribution / Impacts

The General Environment Law has made *environmental LUP* one of the key instruments of environmental policy.

This law sets a minimum standard baseline for sustainable land use at the national level. In other words, it is a minimal standards or “environmental threshold law”; the *basic conditions for land use and planning policy* set in the Law have become a common national environmental standard, or requirement, for all provinces. The Law provides a strong legal frame for a *future national minimal standards law on land use*. Such a law would contain detailed requirements for land use plans, and the respective provincial administrations and municipalities would then be required to prepare provincial or local plans and manage development in accordance with the national minimal standards requirement.

Limitations / Reflections / Lessons

The planning law to date has been virtually limited to a chapter of administrative law dealing with the regulation of development in an urban context, and has been mainly concerned with zoning issues, occupation densities, and

permitted land uses. Furthermore, where *land use and planning laws do exist, enforcement has tended to be lax*, in part because the issue itself has not, in the past, been perceived to be of much importance by policymakers. Defining the limits between property rights and the public interest remains a strong challenge for the successful implementation and enforcement of LUP. In the context of urban land use, planning regulations are widely accepted as a necessary restriction upon unbridled private enterprise, imposed by the need to protect collective interests, such as infrastructure needs or environmental quality. In urban contexts, the benefits of orderly development, and a rational system of land use regulation, are tangible, thus far outweighing the costs imposed by planning laws.

The benefits of land use regulation seem less apparent in rural areas (e.g., agricultural land); this is partly because many land use restrictions imposed in rural contexts relate to the protection of common and intangible goods (e.g., safeguarding biodiversity, ecosystem services, or the preservation of water quality). Benefits derived from ecosystem services are widely recognized, however they do not easily translate into a concrete economic value for the landowner bearing the burden of regulatory restrictions. Rural landowners are, therefore, reluctant to bear restrictions imposed by land use regulations which lead to direct costs related to the loss of productivity, with no direct benefits other than those related to good environmental citizenship.

A major challenge for policymakers is to bridge the gap between land use in urban and rural contexts, and to integrate both with conservation legislation. Land use and planning policy must be conceived and implemented as a comprehensive exercise involving the integration of urban, rural, and conservation-related systems of planning and land use regulation. Key **legal and economic instruments** for the successful implementation of such a comprehensive land use system are required to this end. The concept of private property as an absolute value is strongly entrenched among farmers and rural communities; a broad paradigm shift is, thus, required in order to translate the need for spatial planning into a legitimate and accepted public policy goal. If and when the General Environment Law is fully implemented, in letter and substance, by both federal and provincial administrations, the implications will potentially be far-reaching. Land use plans will need to be integrated and linked with environmental impact assessments (EIA); they should, additionally, become mandatory for all jurisdictions, providing overall orientation and specific guidelines for public-sector infrastructure development and private-sector investment decisions. Source: [16]

2.8 LUP IN MEXICO – NATIONAL SCALE

Policy: General Law of Ecological Balance and Environmental Protection (*Ley General del Equilibrio Ecológico y Protección al Ambiente- LGEEPA*) in matters of ecological planning and organization (1987).

Criteria of best practice identified: *vertical integration*; effective and linked institutions at local, sub-national and national levels; multi-sectoral coordination (horizontal integration); a set of planning procedures applicable at different scales; clear objectives; legally binding land use plans; aims at sustainability, balancing social, economic and environmental needs; multi-stakeholder engagement (promotes civic engagement, special recognition of women's role and that of indigenous communities).

Focus

LUP in Mexico is framed by policies on social development and the environment. Both the political Constitution of the United States of Mexico (Article 27) and the General Law of Ecological Balance and Environmental Protection (*Ley General del Equilibrio Ecológico y Protección al Ambiente - LGEEPA*) call for the creation of ecological zoning plans (*ordenamientos ecológicos*). The law defines ecological zoning as “the environmental policy instrument intended to regulate or determine land use and production activities, to protect the environment and promote sustainable use of natural resources based on an analysis of degradation trends, and potential uses.”

National development plans aim to achieve social development in harmony with nature, through the strengthening of an environmental culture and by the sustainable use of natural resources. This requires adopting national land use plans for urban and rural; local, regional and national development.

Background (socio-political and legal context)

Two pieces of legislation, namely the LGEEPA (1987) and the General Human Settlements Law (1993) drive land use planning in Mexico. Article 27 of the Mexican Constitution grants Congress the power to dictate the necessary measures for the development of human settlements and for the establishment of adequate land, forest and water reserves. It establishes the basis for concurrent federal and state jurisdiction in matters of environmental protection. The Constitution recognizes the right of all people to an adequate environment for personal development and welfare. The Ecology Law (LEPGA) is the regulatory law adopted under Article 27 of the Constitution; it has provisions for environmental planning, ecological organization of the territory, and the sustainable use of natural resources.

The Law designates the Secretary of Environment and Natural Resources (Secretaría de Medio Ambiente y Recursos Naturales, SEMARNAT) as the body responsible for the *Comprehensive national ecological LUP programme*, POEGT¹⁷. This programme requires stakeholder involvement, and is mandatory throughout the country [17]. National *urban zoning planning*, meanwhile, is implemented under the *General Human Settlements Law* by way of a series of other federal, state and municipal urban development plans and programmes, which include: the national urban development programme and integrated urban zoning programmes.

Land tenure is an important aspect of Mexico's LUP. Land tenure, guided by Article 27 of the Constitution and the Agrarian Law (1993), can take two forms: (1) private property; and (2) social or common property, which includes *ejidos*¹⁸ and *comunidades*. Even though ejidos and communities are autonomous, they must nevertheless comply with federal laws, such as the LGEEPA, the General Law on Human Settlements, the Forestry Law and the Sustainable Rural Development Law, to name a few. The *Sustainable Rural Development Law* applies to ejidos and rural production communities and organizations, as well as to associations at the national, regional, district, municipal or community level. Actions undertaken by the ejidos and communities must meet the criteria for preservation, restoration and sustainable use of biodiversity and natural resources, as well as criteria for the prevention and mitigation of environmental impact. The Law stipulates that the State has responsibility for the *planning of sustainable rural development*, carried out by federal government agencies and entities, and by means of agreements with regions and municipalities (i.e., promoting vertical integration).

LUP implementation follows a decentralized, sectoral approach, with two main coordinating agencies: SEMARNAT (national, regional and territorial LUP as specified in the LGEEPA), and SEDESOL (urban LUP). The LGEEPA fosters public participation in the planning process; the SEMARNAT promotes the involvement of citizen groups, landowners, local governments, indigenous people, and other social, public and private organizations in the devising of ecological zoning plans.

¹⁷ Programa de ordenamiento ecológico general del territorio

¹⁸ *Ejidos* are common lands occupied and farmed by rural peasants or farmers, with their own government structure.

Implementation:

Environmental LUP of the national territory is conducted through national, regional and local environmental land use plans. There are four types of ecological zoning plans: (1) a national general ecological zoning plan; (2) regional ecological zoning plans; (3) local ecological zoning plans; and (4) marine ecological zoning plans. The SEMARNAT is responsible for developing the overall national ecological zoning plan within the framework of the National Democratic Planning System (Sistema Nacional de Planeación Democrática); it is also the agency responsible for multi-sectoral coordination. *Urban LUP*, meanwhile, falls under the responsibility of the Secretary of Social Development (SEDESOL). Integrated urban zones comprise two or more urban areas situated in neighboring states or municipalities that – due to their geographical, economic and/or urban conditions – constitute a single urban area. Integrated urban zoning programmes are adopted and overseen by an integrated urban commission, headed by a SEDESOL representative; they are instrumental when it comes to the coordination of the planning and regulation of the integrated urban area. Once approved by the commission, the programme is implemented by the respective municipalities. The federal government works with regions¹⁹ and municipalities to establish territorial reserves for urban development and housing.

Approach

National zoning plans: SEMARNAT is responsible for overall zoning plans: (1) the ecological zoning of the country has to consider the characteristics, availability and demand of existing natural resources, the promotion of productive activities in a given area, and the presence of human settlements; (2) zoning must also take into account the ecological strategies and guidelines for the preservation, protection, restoration and sustainable exploitation of existing natural resources.

The process of environmental LUP comprises: 1) description of the land system; 2) integrated diagnosis of the land system; 3) forecast (public participatory debate); 4) proposition of comprehensive/national environmental LUP model (Modelo de Ordenamiento Ecológico General del Territorio, MOEGT); and 5) implementation.[17]

Regional ecological zoning plans: SEMARNAT, through cooperation agreements, assists state governments and that of the Federal District, in devising and issuing regional ecological zoning plans that may cover the federate entity as a whole or in part. Regional ecological zoning plans must abide by, and comply with, the national “general” ecological zoning plan. Besides considering ecological and environmental factors, ecological zoning plans must also evaluate socioeconomic and political factors, including population, urban development, state and municipal services, and primary, secondary, and tertiary productive economic activities, to name but a few.

Local ecological zoning plans: these are issued by municipalities or by the Federal District for the purpose of determining the different ecological areas within a given zone, as well as for regulating urban centers and land uses, and establishing the conditions for the sustainable exploitation of natural resources in urban centers.

Urban LUP: The role of the federal government in urban LUP is limited, as land use regulation is delegated primarily to state and municipal authorities. The Secretary of Social Development is responsible for regulating, administering and promoting urban development in cooperation with other federal secretariats, as well as with state and municipal authorities, within their respective areas of competency. Furthermore, SEDESOL and the state and municipal governments assist in developing and regulating the “*national zoning plan of human settlements and urban development*” [18], which is part of the national democratic planning system. The national urban zoning plan establishes broad sectoral policies aimed at advancing the objectives set out in national, state and municipal plans.

¹⁹ Estados in Spanish.

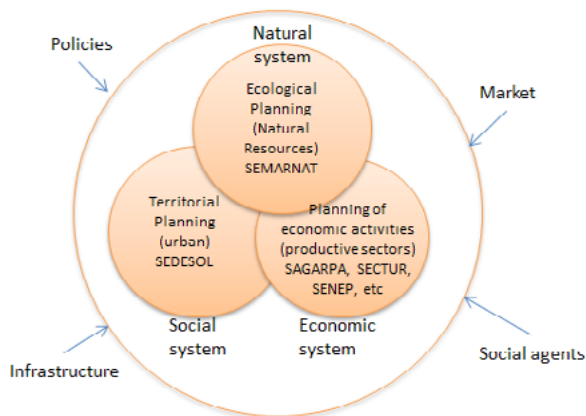


Figure 5: Sectoral, fragmented approach of territorial LUP in Mexico [18]. Programas de Ordenamiento Ecológico del Territorio (POET) mandate of SEMARNAT; Ordenamiento Territorial (OT); Programas Estatales de Ordenamiento del Territorio (PEOTs), mandate of SEDESOL.

Contribution / Impacts

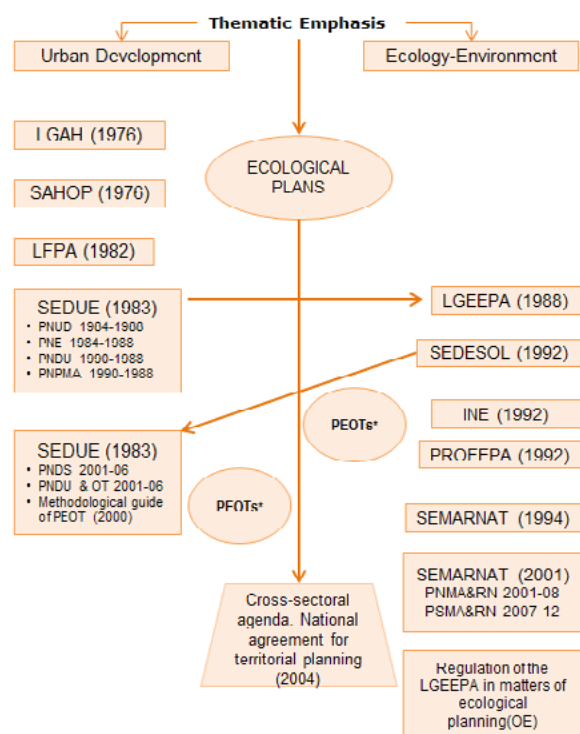
Since the adoption of the LGEEPA, all states have passed environmental laws that partially or wholly address environmental matters, such as ecology, urban development, subdivisions, water treatment, planning, sanitation, public administration, transportation, human settlements, and public works. Several states have issued regulations to accompany these laws. Regulations at the municipal level are also plentiful in Mexico, and Mexico's major municipalities have begun to enact their own municipal ecology regulations.

Limitations / Reflections / Lessons

In spite of all the progress made at federal, state, and local levels by the establishment of the legal framework for LUP and natural resource management, there is little practical integration between social development (urban planning) and environmental legislation (comprehensive environmental LUP)[19].

Good practice of environmental land use management at the regional and municipal levels exists, but the national-level vision of LUP has been weakly enforced. By 2013, sixty-four environmental land management regulations had been issued, for regions and municipalities, some for marine regions, many of which are currently in the implementation phase [17].

Pavon and Gonzalez [19] argue the agencies in charge of coordinating urban LUP (SEDESOL) and the comprehensive ecological/territorial LUP (SEMARNAT) need to improve cooperation to achieve better outcomes in terms of improving people's quality of life and the natural



environment in urban settlements. It is suggested that these two agencies should: maintain a national database with all relevant information on natural and economic resources in each region; adopt regulations that implement environmental laws, alongside social development policies, regarding LUP; incorporate ejidos and communal properties to achieve rational urban expansion; and stop illegal settlements in natural protected areas.

It is in the rural context where the benefit of land use regulation is less evident. Although environmental benefits are widely recognized, if rural landowners do not see concrete economic value in them, they will be reluctant to bear the cost of land use regulations and restrictions.

The implications of the General Human Settlements Law and the General Law of Ecological Balance and Environmental Protection are potentially far-reaching if fully implemented by the federal government, the states, and the municipalities. There is an evident legislative *intention* that environmental policy instruments (LUP, etc) should be used in an integrated and coordinated fashion to respect constitutional goals of environmental protection and social development in urban and rural areas. However, there is a need for financial, legal, and technical support to coordinate human activities with the environment.

Better promotion is required of public and private investments for the establishment and management of social and LUP. Economic and tax incentives are needed for individuals and public or private organizations to use their lands for conservation purposes.

Source: [19, 20]

2.9 LUP IN SINGAPORE – NATIONAL SCALE

Policy: Concept plan (2011)

Criteria of best practice identified: vertical integration; effective and linked institutions at local, sub-national and national levels; multi-sectoral coordination (horizontal integration); a set of planning procedures applicable at different scales; clear objectives; legally binding land use plans; aims at sustainability, balancing social, economic and environmental needs; stakeholder engagement; realistic and oriented to local conditions; links LUP and nature conservation laws; land use planning is future-oriented.

Focus

The Concept Plan of 2011 outlines the necessary strategies to ensure the country's physical capacity to sustain a high quality living environment for a potential population range of 6.5 to 6.9 million, by 2030. It also sets land aside to provide options beyond 2030, so that future generations will have room for growth and development. The strategies to sustain a high quality living environment include: integrating greenery into the living environment; providing greater mobility with enhanced transport connectivity; sustaining a vibrant economy with good jobs; and ensuring room for growth and a good living environment in future.

Background (socio-political and legal context)

Singapore's land scarcity makes LUP crucial. The Concept Plan is a strategic land use and transportation plan that guides Singapore's development over the next 40–50 years. Reviewed every ten years, the Concept Plan ensures that there is sufficient land to meet long-term population and economic growth needs while providing people with a good quality living environment.

The first Concept Plan was formulated in 1971 and laid the foundation for Singapore's growth and improved quality of life with new towns, transport infrastructure and access to recreation. It included identification of ecologically sensitive areas for nature conservation, and projection of land needs for transportation and communications, etc. The Concept Plan was subsequently reviewed in 1991, and in 2001, to factor in changes in local and global trends, and ensure that it remains relevant to address future challenges.

Public consultation is an important component of the Concept Plan process. Engaging with stakeholders and the public at large enables better understanding of people's concerns and aspirations, which can then be included in future planning. Past Concept Plan reviews included extensive public consultation through surveys, focus group discussions, and public fora.

Implementation

Strong multi-agency/multi-sectoral coordination drives the implementation of the Concept Plan. It is coordinated by the Ministry of National Development through the Urban Redevelopment Authority (URA). A plan for parks and waterbodies, drawn up by the URA and National Parks, guides the development of parks and waterbodies.

Approach:

The Master Plan (MP) is the statutory land use plan that guides Singapore's development in the medium term (10 to 15 years). It is reviewed every five years and it *translates the broad long-term strategies of the Concept Plan into detailed plans to guide the development of land and property*. The Master Plan shows the permissible land use and density for development in Singapore. The Concept Plan and the Master Plan (Figure 6) provide a comprehensive, forward-looking and integrated planning framework for sustainable development.



Figure 6: The LUP process.

The Concept plan focuses on optimizing industrial, commercial and residential land use. The government, by means of the Concept Plan, focuses on maximizing land capacity through reclamation, and optimizing the use of existing land.

Contribution / Impacts

The Concept Plan has played a vital role in helping to balance competing land use needs, such as housing, industry, commerce, parks and recreation, community facilities, transport, and defense. In reviewing the Concept Plan, all major land needs are considered in collaboration with relevant government agencies.

As result, a comprehensive network linking major parks and nature areas has been developed. The parks and waterbodies plan establishes a network of parks and park connectors spanning some 360 kilometers, facilitating the enjoyment of the island's nature through a continuous green network.

Limitations / Reflections / Lessons

Tensions regarding the conservation of natural areas and the prerogative of the government to plan for future developments remain. Efforts have been made to reduce pollution, clean up the environment, and improve the life quality of the people of Singapore. These efforts have, by and large, been very successful. Strong environmental governance and political foresight have been the main drivers of a successful policy implementation.

The government has made considerable efforts for public participation in deliberations on the Green Plan²⁰, discussions on the Concept Plan and revisions of the Master Plan; despite these efforts, the involvement of the public is still inadequate, as the final product of these deliberations is crafted by the authorities without further input from members of the various committees.

The 2013 Land use plan, driven by close coordination among planning agencies, outlines the strategies requisite to ensure that Singaporeans will continue to enjoy a high quality living environment. The government plans to invest in research, and explore and support innovative urban solutions which promote better quality of life.

Source: [21-23]

²⁰ Singapore Green Plan 2012 (SGP 2012) was released in 2002 by the Ministry of the Environment and Water Resources (MEWR). The plan aims to create an environmentally-conscious Singapore, promoting conservation of the nation's natural resources and the use of green technology to conserve the environment, both locally and globally.

2.10 SPATIAL PLANNING IN INDONESIA – NATIONAL SCALE

Policy: Spatial Planning Law 26/(2007)

Criteria of best practice identified: vertical integration; effective and linked institutions at local, sub-national and national levels; multi-sectoral coordination (horizontal integration); a set of planning procedures applicable at different scales; stakeholder engagement; legally binding land use plans; LUP which relates to spaces and places; accountability.

Focus

Spatial planning is defined as plan-making process, plan implementation, and development control. The Law includes guidelines for this process to be undertaken at national, provincial and local levels.

Background (socio-political and legal context)

Spatial plans in Indonesia first gained a legal basis with the passage of Law No. 24/1992 (Spatial Planning Act). The Act was amended in 2007 in the context of *decentralization*, urbanization, and other factors (Law No.26/2007); at the time, response to rapid urbanization was regarded as the most pressing issue. The Act promotes multi-sectoral coordination, contains a transport plan, a green space plan, and information related to informal sectors – especially in the spatial plans for cities (since this is not always required in provincial spatial plans).

The Spatial Planning Law explicitly stipulates the authority of provincial governments and of district governments in spatial planning. Provincial and district governments have broad authority in spatial planning, and may include new components in their spatial plan that are not stipulated in higher level spatial plans (e.g., national). The spatial plans of each level of government become long-term guidelines for the government leaders at each level (president, governors, and mayors or regents) to govern in their respective jurisdictions.

The Law includes a principle of accountability and it stipulates a minimum standard of services in spatial planning to ensure good quality of basic services for the Indonesian people.

Zoning regulations, planning permits, implementation of incentives, disincentives and sanctions are all used as instruments for enhancing controlled development. Implementation of incentives and disincentives can occur from central government to local governments (province, kabupaten and kota); from local governments to other local governments; and from governments to the community. The Law validates the importance of public participation in spatial planning; it provides detailed regulations on rights, obligations and the forms of public participation in spatial planning.

One important provision is the requirement that at least 30% of urban areas be designated as open space (city parks, green roads, cemeteries, etc.). Likewise, forest areas must account for at least 30% of catchment areas.

Implementation

The current national spatial plan (Law 26/2007) covers a 20-year period and is to be reviewed every five years. The National Spatial Planning Coordination Board (chaired by the Coordinating Minister for the Economy) is the organization responsible for drafting the spatial plan. The Directorate General of Spatial Planning of the Ministry of Public Works handles the practical implementation of the board's plan.

Approach

The hierarchy of spatial plans is shown in Figure 7. Spatial plans and *long term development plans* must complement each other at the different levels of implementation (national, provincial, district). If the spatial plan of a province (Rencana Tata Ruang Wilayah –RTRW Propinsi) or district (RTRW Kabupaten and Kota) precedes their respective long-term development plan, the former will provide long-term spatial development guidelines for the latter.

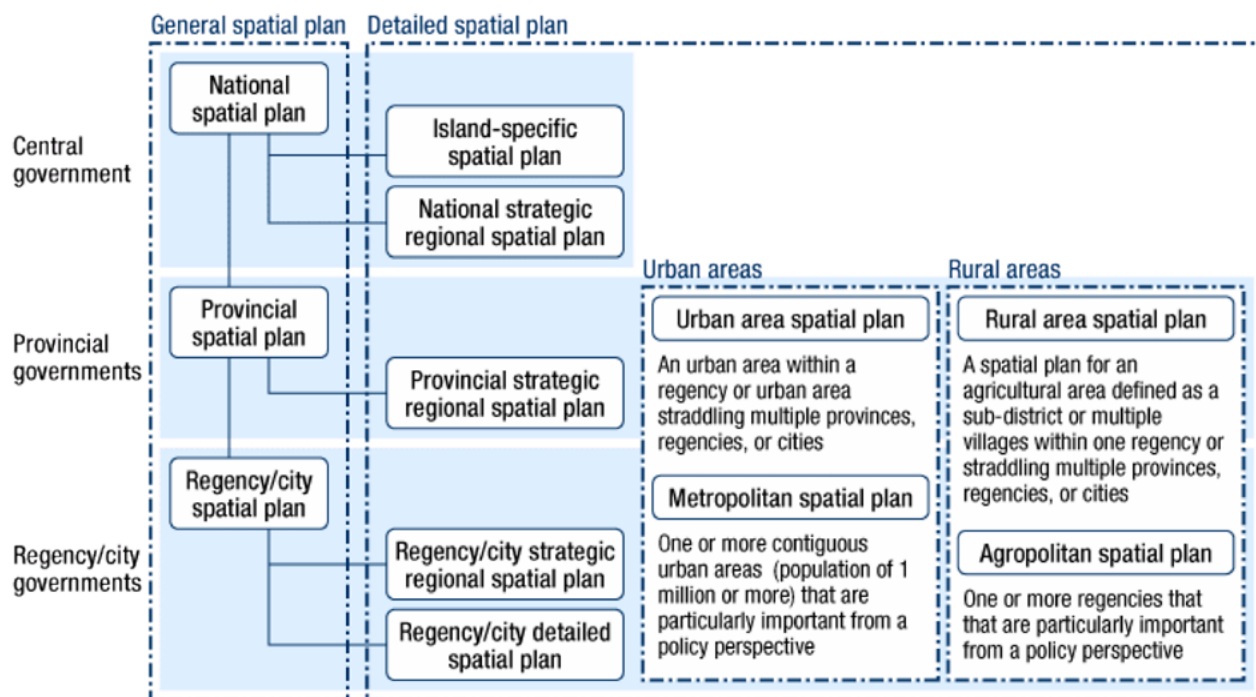


Figure 7: Hierarchy, responsibilities and interlinkages of spatial planning in Indonesia. Source: [12]

Contribution / Impacts

An analysis by Rumana [24] on change and transformation of Indonesian Spatial Planning after Suharto's New Order Regime reports the contributions and impacts of spatial planning on governance to be: transformation of Indonesia from authoritarian rule into a more democratic government; more transparent and accountable system of government; more participatory system of governance; rule of law and increased efficiency; and potential for President's abuse of power in local spatial plans is no longer an issue.

Limitations / Reflections / Lessons

The Spatial Planning Law stipulates the requirement that at least 30% of urban areas must be open spaces, but this provision is poorly implemented, particularly by local governments. In the 1970s, green areas made up between 40% and 50% of Jakarta, but have been shrinking ever since. In 2009, green areas in Jakarta accounted for only 9.3% of the city's area [24]. Though sanctions for spatial plan violations are specified in the Law, the government failed to impose sanctions against the conversion of green areas in the Jakarta metropolitan area. Spatial plans have been largely ignored by the Jakarta city administration; enforcement has, in other words, been weak. Most planning departments in Indonesian cities lack zoning inspectors. Technical and legal training and adequate operational budgets for spatial plan inspections should be offered to the officials at the lowest levels of government, including the sub-district (kecamatan) and neighborhood (kelurahan) levels to enhance enforcement. The following risks and political drivers of the Spatial Planning Law [24] have been identified:

Risks

- Local governments use their decentralized powers to exploit natural resources more intensively, generating more local revenues;
- Local governments cannot efficiently and effectively manage their resources, and fail to provide for basic needs and the improvement of public services;
- Local governments prefer to expand economic growth and employment rather than to enforce spatial plans;
- Very few sanctions have been imposed against spatial plan violations;
- Local governments cannot enforce spatial plans when the areas are fully controlled by the central government;
- Lack of technical and legal training and adequate operational budgets for spatial plan inspections at the lowest levels of government;

Political drivers

- Centralized and arbitrary political culture derived from the New Order regime has pervaded Indonesian communities;
- Clientelism governance culture in Indonesia

Source: [12, 24]

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