ENVIRONMENTAL MANAGEMENT AND LAND-USE MANAGEMENT IN SOUTH AFRICA: COMPLEXITIES, CHALLENGES AND OPPORTUNITIES FOR INTEGRATED STRATEGIC PLANNING IN DEVELOPING COUNTRIES

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ABSTRACT

The interface between environmental management and land-use management forms the focal point to attain sustainable development and resilience within spatial systems. The principle of sustainable development is not a new phenomenon and is being applied by professional practitioners in theory but often not understood in formulation of planning instruments and its application as to promote resilience as a common goal and objective. Environmental practitioners and planning professionals have realized that there is a delicate balance between environments, human, economic, institutional, transportation and spatial planning in articulation of planning, development and management. This balance is however negatively being impacted upon, due to the collapse of this relationship and trans-disciplinary approaches and practices.

The purpose of this chapter is to report on the historic development of the environmental management domain linked to the transformation in spatial planning and land-use management systems from an integration perspective within democratized South Africa and the lessons it holds for developing countries and spatial systems that have emerged from colonialized countries.

The timelines in development and transformation between environmental and spatial planning differ in focus, role and functional impact as far as statutory requirements and processes are concerned. This interface is however most important in all planning cycles applied within spatial systems.

In this chapter an assessment is made of the process in terms of its evolution and the need to align its processes in the enhancement of sustainability and promotion of resilience. The enhancement of this interface through application of strategic planning methodologies, processes, procedures and planning tools are being discussed to deal with environmental management and spatial planning complexities, challenges and opportunities.

The conclusions consist of recommendations to grow and built this interface. It includes improved integration of the policy and legislative frameworks; capacity building amongst the different professions; improved alignment in education, training and professional practice and integrated simulation and modelling techniques, methodologies and the need to formulate trans-disciplinary plans as to promote the integration of the interface.

Keywords: environmental management, spatial planning, land-use systems, trans-disciplinary planning, sustainability and resilience, environmental modelling.

1 INTRODUCTION

This chapter builds on recent work by Retief and Cilliers [1] and Cilliers and Retief [2] on land-use management (LUM) and planning and environmental planning tools (e.g. Environmental Management Framework, EMFs) in South Africa. In this context, LUM is understood as the establishment and implementation of mechanisms to regulate land-use rights through the use of spatial planning instruments, land-use schemes and land development procedures. A distinction is made between ‘spatial planning’, ‘development planning’ (dealt with in Section 2) and ‘land-use management’ (LUM), and the implications it holds for strategic planning and modelling.

During the Apartheid era, spatial planning and development inclusive of land-use management relating to the differentiated and segregated spatial systems and areas for functional planning, statutory control and management [3] relied on a very complex regulatory system. Many of the discriminatory effects of Apartheid in terms of land use and land-use rights were given effect through the LUM system of the time.

Since the new dispensation in 1994 attempts have been made to repeal the plethora of old legislation related to LUM. The aim was to draft a single national act to repeal the previous LUM system. However, progress was slow, with almost a decade passing before the promulgation of the first version of the then 'new' Land Use Bill in 2001 [4], [5], and another decade before SPLUMA was finally enacted in 2013 [6]. The SPLUMA Regulations were published in May, 2015 [7].

A number of 'draft' provincial spatial planning and land-use management acts have also been adopted or are being drafted. Unfortunately, notwithstanding the progress made, the status of land-use rights in some provincial spatial systems are still determined and managed by mechanisms established under legislation from the previous dispensation, some acts dating back to the 1960s. Tables 1 and 2 show the core policies and legislative framework guiding the interface between spatial planning, land-use management and environmental management. From the tables, it is concluded that the LUM system in South Africa remains to be complex and inefficiently governed. However, some standardization and, some would argue, rationality is brought to the equation with the introduction of SPLUMA [6] in 2013.

Parallel to the evolution of the LUM system environmental management has, since 1994, developed a number of innovative environmental planning and assessment tools such as environmental management frameworks (EMFs), strategic environmental assessment (SEA), conservation planning (C-Planning), etc. Furthermore, project level environmental management tools such as environmental impact assessment (EIA), social impact assessment (SIA), heritage impact assessment (HIA), etc. has been developed. In light of these developments it makes sense to critically consider the challenges and opportunities to align and/or integrate the environmental management and LUM systems.

The next section introduces challenges facing of the current LUM system and the implication of the transformation as provided for by SPLUMA [6] after which more specific environmental management tools are discussed in relation to LUM.

2 CHALLENGES FOR LAND-USE MANAGEMENT

The main challenges for LUM in South Africa relate, amongst other to the inherent uncertainties and complexities of the system, which are discussed in this section. Admittedly the new legislative context around the SPLUMA aims to address these challenges, which suggest that we are amidst a transition phase towards more certainty and clarity.

2.1 The status quo and land-use management reality

The land-use management reality in South Africa poses various challenges, specifically related to the uncertainties and complexities inherent to the historic system. For our purpose we identify four key challenges related to the LUM system, building and expanding on the three challenges highlighted by Retief and Cilliers (2015) [1]:

- **Policy uncertainty (Table 1):** This refers to the policies and guidelines that deal with strategic focuses, planning processes and related spatial system realities and focuses.
- **Legislative uncertainty (Table 2):** This refers to the legislative framework which deals with LUM. These acts date from the 1960s to as recent as 2015. The supporting legal

Table 1: Core policies guiding the interface between spatial planning and environmental management. (Source: author's own compilation, 2015.)

Land-use management	Environmental management
<p>Reconstruction and Development Plan (1994)</p> <p>Growth, Economic and Redistribution Strategy (1996)</p> <p>White Paper on South African Land Policy (1997)</p> <p>Urban Development Framework (1997)</p> <p>Rural Development Framework (1997)</p> <p>White Paper on Water and Sanitation (1997)</p> <p>White Paper on Local Government (1998)</p> <p>Green Paper on Development and Planning (1999)</p> <p>National Integrated Rural Development Strategy (2000)</p> <p>King Report II on Corporate Governance for South Africa (2002)</p> <p>White Paper on Spatial Planning and Land Use Management (2001)</p> <p>National Spatial Development Perspective (2003)</p> <p>Mining Charter (2003)</p> <p>Construction Charter (2005)</p> <p>ASGISA (2006)</p> <p>National Spatial Development Perspective (2006)</p> <p>Housing Atlas (2006)</p> <p>Sustainable Human Settlement Planning: Resource Book (2008) (NDoH)</p> <p>Area-based Planning: Department of Rural Development and Land Reform (2008/2009)</p> <p>NPC: A Guide to the National Planning Framework (2009)</p> <p>NPC: Green Paper: National Strategic Planning (2009)</p> <p>Comprehensive Rural Development Programme: Department of Rural Development and Land Reform (2009)</p> <p>National Planning Commission Diagnostic Overview (2011)*</p> <p>National Developted Urban Plan (2012)*</p> <p>Draft Integrated Urban Development Framework (2015)</p>	<p>Global Biodiversity Strategy: Guidelines for action to save, study and use earth's biotic wealth sustainably and equitably (published by the WRI, IUCN and UNEP in 1992)</p> <p>Balancing the Scales: Guidelines for increasing Biodiversity's Chances through Bioregional Management (published by the World Resources Institute in 1996).</p> <p>Minimum requirements for the Classification, Handling and Disposal of Hazardous Waste (Second Edition) (1998) (DWAF)</p> <p>Integrated Environmental Management Guidelines Series (1992)</p> <p>DEAT: An Environmental Policy for South Africa (Green Paper) (1996)</p> <p>White Paper on Integrated Pollution and Waste Management for South Africa (2000)</p> <p>Strategic Environmental Assessment in South Africa (2000)</p> <p>DEAT (2002a) <i>Screening. Information Series 1</i>, Department of Environmental Affairs and Tourism (DEAT), Pretoria.</p> <p>DEAT (2002b) <i>Scoping. Integrated Environmental Management. Information Series 2</i>, Department of Environmental Affairs and Tourism (DEAT), Pretoria.</p> <p>DEAT (2002c) <i>Specialist Studies, Information Series 4</i>, Department of Environmental Affairs and Tourism (DEAT), Pretoria.</p> <p>DEAT (2002d) <i>Impact Significance</i>, Integrated Environmental Management, Information Series 5, Department of Environmental Affairs and Tourism (DEAT), Pretoria.</p> <p>DEAT (2004a) <i>Overview of Integrated Environmental Management</i>, Integrated Environmental Management, Information Series 0, Department of Environmental Affairs and Tourism (DEAT), Pretoria.</p> <p>DEAT (2004b) <i>Criteria for determining Alternatives in EIA</i>, Integrated Environmental Management, Information Series 11, Department of Environmental Affairs and Tourism (DEAT), Pretoria.</p> <p>DEAT (2004c) <i>Environmental Impact Reporting</i>, Integrated Environmental Management, Information Series 15, Department of Environmental Affairs and Tourism (DEAT), Pretoria.</p> <p>Strengthening Sustainability in the Integrated Development Planning Process (2001)</p> <p>State of the Environment Reporting: Draft Guidelines for Local Municipalities (2005)</p> <p>DEAT Information Series (2004-2009)</p> <p>National Framework for Sustainable Development (2008)</p>

*Cross-cutting policies.

Table 2: Core legislative framework guiding interface between spatial planning, land-use and environmental management. (Source: Author's own compilation, 2015.)

Spatial planning and land-use management	Environmental management
National Building Regulations and Building Standards Act 103 of 1977 Town Planning and Township Ordinance, Ordinance 15 of 1986 Land Use Ordinance (Cape of Good Hope), Ordinance 15 of 1985 Removal of Restrictions Act 84 of 1967 The Less Formal Township Establishment Act 113 of 1991 The Physical Planning Act 88 of 1967 (Sections 6, 8 and 11) Development Facilitation Act 67 of 1995 (DFA) Constitution of the Republic of South Africa 108 of 1996 Bill of Human Rights 1996 Physical Planning Act 88 of 1967 Municipal Structures Act 117 of 1998 Restitution of Land Rights Act 22 of 1993 Interim Protection of Informal Rights Act 76 of 1995 Prevention of Illegal Eviction from Unlawful Occupation of Land Act 19 of 1998 Reconstruction and Development Programme Act 79 of 1998 Municipal Systems Act 32 of 2000 Development Facilitation Act 67 of 1995 (DFA) Physical Planning Act 125 of 1991 Less Formal Township Establishment Act 113 of 1991 (LEFTEA) Subdivision of Agricultural Land Act 70 of 1970 (SALA) Removal of Restrictions Act 84 of 1967 Community Land Reform Act 28 of 1996 (CLARA) Housing Act 107 of 1997 National Land Use Management Bill (Draft 2008) Local Government: Municipal Integrated Development Planning Regulations, 2001. Spatial Planning and Land Use Management Act (SPLUMA) 16 of 2013* R. 239 SPLUMA Regulations (23 March 2015)*	Health Act 63 of 1977 Water Act 54 of 1956 National Water Act 36 of 1991 Water Services Act 108 of 1997 National Environmental Management Act 107 of 1998 (NEMA) National Environmental Management: Air Quality Act 39 of 2004 National Environmental Management: Waste Act 59 of 2009 National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) National Environmental Management: Protected Areas Act 57 of 2003 (NEMPAA) National Heritage Resources Act 25 of 1999 (NHRA) Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA) World Heritage Convention Act 49 of 1999 Biodiversity Act 10 of 2004 R.543: National Environmental Management Act 107 of 1998; Environmental Impact Assessment Regulations, 2010 (33306) R.544: Listing Notice 1: List of activities and competent authorities identified in terms of sections 24(2) and 24D (33306) R.545: Listing Notice 2: List of activities and competent authorities identified in terms of sections 24(2) and 24D (33306) R.546: Listing Notice 3: List of activities and competent authorities identified in terms of sections 24(2) and 24D (33306) R.547: Environmental Management Framework Regulations, 2010

*Cross-cutting legislation.

**Various by-laws exist within municipalities.

principles underpinning the frameworks are included in Scheepers [8] and Van Wyk [9]. From the work by Retief and Cilliers [1] it is also possible to explore the evolution of legislation over time in the following sections.

- ***Institutional and procedural complexity:*** The complexity related to institutional arrangements is a result of mandates assigned by legislation, some of which in a highly unconstitutional manner; especially where provincial governments make decisions on municipal planning matters, while the latter is clearly the mandate of a municipal council (as per the Constitutional Court Ruling of 18 June 2010 [10]), where the Court, amongst other, decided that the Constitution envisage a degree of autonomy for the local sphere of government in which municipalities exercise their original constitutional powers free from undue interference from other spheres of government). Retief and Cilliers [1] illustrate this complexity by comparing the different types of land-use management authorisations processes against the relevant legislation and designated authorising authority.
- ***Spatial complexity:*** The complicated LUM system is also represented spatially, with different locations administered by different historic legislation, sometimes even more than one act on a given location. This is best illustrated by using a specific local municipality case example from Retief and Cilliers [1] and Cilliers and Retief [2], discussed in the following sections.

2.1.1 Policy uncertainty guiding spatial planning and land-use management

The policy complexities guiding spatial planning and land-use management are shown in Table 1. The United Nations in 2008 [11] states that spatial planning is largely a public-sector function to influence the future spatial distribution of activities (inclusive of land uses). Spatial planning and land-use management thus aims to create a more rational territorial organization of land and the linkages between them, to balance demands for development with the need to protect the environment, and to achieve social and economic objectives.

Spatial planning (inclusive of land-use management) thus consists of measures to coordinate and improve the spatial impacts of other sectoral policies (Table 1). This forms part of the endeavour to achieve a more even distribution of economic development within a given territory than would otherwise be created by market forces. The United Nations report depicts that spatial planning (inclusive of land-use management) forms an important lever for promoting sustainable development and improving the quality of life in all spatial systems.

The report by the United Nations on spatial planning as key instrument for development of effective government includes land-use regulation or development management on municipal level [11]. All policy instruments guiding land-use management should thus be related to spatial planning tools such as spatial development frameworks. At the same time, it should be noted that the formulation of policies may precede, guide or follow the legislative process directing spatial planning and land-use management.

Table 1 demonstrates also the core policy complexities guiding spatial planning and land-use management and its relationship to environmental management. The policies as identified impacts on the formulation of spatial planning tools, land-use management systems in a wider sense regulating land development, potential and control.

2.1.2 Legislative uncertainty guiding spatial planning and land-use management

Table 2 shows the core legislative framework guiding the interface between spatial planning, land-use management and environmental management, while Table 3 provides a legislative analysis over time. Three distinct periods are identified namely, pre-1994, the transition period between 1994 and 2000 and the post-2000 period. The analysis undertaken by Retief

and Cilliers [1] illustrates which acts have been repealed and which acts are still in force. The high number of acts reflected in Table 3 supports the notion of legislative uncertainty and complexity as a particular challenge for LUM.

Tracing the origins of LUM (pre-1994 period) in South Africa takes us back to the first Dutch colonization of the Cape where a rudimentary system of land allocation through title deeds were introduced. This was followed by the more stringent LUM system developed in England during the industrial revolution and exported to its colonies in the 1800s (see Van Wyk [12]). Much has been written on the evolution of land management and ownership from the post British colonial era to the formalized Apartheid system in the 1900s. The most prominent legislation during this time was, amongst other, the Native (Black) Urban Areas Act No 21 of 1923 Native (Urban Areas) and Consolidation Act No 25 of 1945 eventually repealed by the Abolition of Influx Control Act No 68 of 1986. These acts had the purpose of regulating the movement and land ownership of individuals according to race. Another set of important legislation was the four provincial town planning ordinances (refer also to Mears [13], Williams [14], Glazewski [15], Wynberg [16]) together with the Group Areas Act, amended 17 times and finally repealed by the Abolition of Racially Based Land Measures Act, No. 108 of 1991. However, during the 1980s the Black Communities Development Act 4 of 1984, and especially Annexure F to this act, served to provide nationally standardized zoning descriptions for so-called '*black areas*'.

Directly following the first democratic election in 1994 there was a concerted effort to do away with the racially based LUM policy and legislation. The two most important new Acts in relation to LUM were Local Government Transition Act (LGTA) 209 of 1993 and Development Facilitation Act (DFA) 67 of 1995 [17]. The first relates to the restructuring of local government and the second to the implementation of the primary action plan for development of the new ANC government, called the reconstruction and development programme (RDP). Both these acts were so-called interim acts to bridge the pre- and post-apartheid eras. Almost immediately after promulgation of the DFA a committee named the Development and Planning Commission was appointed to investigate the complex nature of the LUM system at the time, and to make recommendations for the required legislative reform. Based on the work of the committee a policy Green Paper on Planning and Development [3] and White Paper on Spatial Planning and Land-use Management [18] was published in 1999 and 2001 respectively. During this transition period, various legislation that entrenched 'apartheid' and thus fragmented spatial development were repealed. Transformation of the legislative framework during the post 1994 democratic period still contributed to the legislative complexities guiding LUM.

Ultimately the Green and White papers translated into the first 'new' Land Use Management Bill published in 2001 [18]. Also, based on the work of the Development Planning Commission was the 'new' demarcation of South Africa into 231 Local Municipalities, 47 District Municipalities, 6 Metros and 9 Provinces in an attempt to amongst other literally redraw the LUM map. South Africa now had nine provinces and wall to wall municipalities which meant that the old Ordinances related to the four previous provinces were dysfunctional as well as the implication that local authorities now also decide on land use in rural areas, which previously was the mandate of the National Department of Agriculture [refer also to 19 and 20]. However, it took 12 years and nine revisions of the initial Land Use Management Bill to eventually publish the SPLUMA in 2013 [5]–[7].

Parallel to the national process of drafting SPLUMA, provinces also produced provincial planning legislation, which are now at varying degrees of finality. Indeed, all provinces are at present in process of promulgation of Provincial SPLUMA's based on the principles as included in SPLUMA and its Regulations [6], [7] The fact that the promulgation of SPLUMA

is still to be proclaimed, results in the fact that a parallel land-use management system is at present being applied within the national spatial system. Moreover, SPLUMA will on promulgation repeal the following existing legislation (Table 2): Removal of Restrictions Act (84 of 1967); Physical Planning Act (88 of 1967); Less Formal Township Establishment Act (113 of 1991); Physical Planning Act (125 of 1991) and Development Facilitation Act (67 of 1995).

2.2 Institutional and procedural complexity of land-use management

It is not surprising that the inefficient and complex LUM system described in relation to the legislative context in the previous sections produce extreme institutional and procedural complexity. This is best illustrated by the fact that until recently the same application for land-use change could be submitted to different spheres of government and in relation to different Acts. For example, applications for township establishment could be submitted in terms of the DFA or Provincial Ordinances or Less Formal Township Establishment Act. This is, from a decision-making perspective clearly untenable. The 2010 Constitutional Court Ruling [21] which gave clarity on the matter by explicitly confirming that LUM is a local government mandate, and also gave instruction for finalization and promulgation of SPLUMA in 2013 [6] and the repeal of certain sections of the DFA [17].

The complexities and uncertainties around mandate also culminated in complexities in decision making processes, because each act has its own process. Therefore, developers typically cherry pick processes based on their needs, deciding for example if they should apply with local government in terms of Ordinances or the provincial government in terms of the Less Formal Township Establishment Act, 1991 (Table 2). The latter presents a much more streamlined process, but was actually introduced for the purpose of dealing with rapid urbanization and a serious housing need and not for typical township establishment processes.

Table 3 provides an example of the complexities indicative of the institutional and procedural complexities of LUM within a particular province such as the North West Province. However, much of this uncertainty will be addressed by SPLUMA [6], and in future the bypassing of local government in decision making on land-use matters will come to an end.

2.3 Spatial complexity of land-use management

The mandate of different acts is not only related to different spheres of government but also has a specific local spatial dimension. Therefore, certain acts apply to certain geographic areas, as illustrated in Fig. 1 for the Madibeng Local Municipality, which have two Town Planning Schemes (the Brits Town Planning Scheme of 1958 and the Hartebeespoort Town Planning Scheme of 1993) as well as a Peri-Urban Scheme under the Transvaal Town Planning and Townships Ordinance 15 of 1986. Land now covered by a scheme is dealt with by the provincial government in terms of the Physical Planning Act 88 of 1967. Moreover, the municipality also includes tribal land under the control of traditional authorities which falls under the Development Facilitation Act 67 of 1995 [17]. Therefore, the main challenge for municipalities is to find ways of integrating previous land-use management schemes drawn up by different historical acts and ordinances. Various more capacitated local municipalities have already succeeded in integrating their town planning schemes, such as the City of Tshwane and the City of Johannesburg Metropolitan Municipalities.

Table 3: Institutional and procedural complexity of LUM – North West Province example. (Source: Retief and Cilliers, 2015, pp. 571–573.)

TYPE OF APPLICATION		DESCRIPTION		RELEVANT LEGISLATION		AUTHORISING AUTHORITY	
NATIONAL LEVEL:							
Subdivision of agricultural land		To subdivide agricultural land outside town planning scheme areas.		Act 70 of 1970 – Subdivision of agricultural land		National Department of Agriculture (Approval)	
PROVINCIAL LEVEL (North West Province)							
Development area		Applications for township establishment, rezoning, any land-use changes in the former Bophuthatswana areas, situated in North West Province. Any kind of land-use application in any part of North West Province.		Act 67 of 1995 – Development Facilitation Act		Tribunal of the Development Facilitation Act, (The Designated Officer and Registrar are officials in Department Developmental Local Government and Housing) (Tribunal Order)	
Business rights		Issue permit for any change of land use on agricultural land (former Transvaal)		Section 6 of Act 88 of 1967 – Physical Planning Act		Department Developmental Local Government and Housing (Permit)	
Public and/or private resorts		Issue permit for public or private resorts on agricultural land outside town planning scheme areas		Section 6 of Act 88 of 1967 – Physical Planning Act		Department Developmental Local Government and Housing (Permit)	
Act 21 of 1940 permission		Issue permit for business rights or resort, if it is stipulated as a restrictive condition in the deed of transfer (Permit) Issue permission for subdivision of agricultural land, if it is stipulated as a restrictive condition in the deed of transfer (Approval/Permission)		Act 21 of 1940 – Advertising on Roads and Ribbon Development Act		Department Developmental Local Government and Housing	
Subdivision of agricultural land		Permission to subdivide agricultural land, when the farm is excluded from Act 70 of 1970		Ordinance 20 of 1986 – Division of Land Ordinance		Department Developmental Local Government and Housing (Approval)	
Cancellation of certificate		When a holding is needed for township establishment, the holding must be excluded from Act 19 of 1919		Act 22 of 1919 – Agricultural Holdings Act		Department Developmental Local Government and Housing (Certificate of cancellation)	
Removal of restrictive conditions		Removal of restrictive conditions from a Deed of Transfer		Act 84 of 1967 – Removal of Restrictions Act		Department Developmental Local Government and Housing (Approval)	

Table 3: Continued.

TYPE OF APPLICATION		DESCRIPTION	RELEVANT LEGISLATION	AUTHORISING AUTHORITY
PROVINCIAL LEVEL (North West Province)				
Township establishment		Township establishment where a serious housing need can be motivated	Act 113 of 1991 – Less Formal Township Establishment Act	Department Developmental Local Government and Housing (Approval)
Township establishment		Certain permissions must be giving by the administrator/premier, in terms of the regulations in the township establishment process. (This is only where the original township application was submitted in terms of this regulations – no new township applications was submitted in terms of this regulations)	Regulation Relating to Township Establishment and Land Use, 1986 (Government Notice No. R 1897 of 12 September 1986)	Department Developmental Local Government and Housing (Approval)
Extension of a town planning scheme area or including of a farm portion in a town planning scheme area		Extension of town planning schemes or inclusion of a farm portion in the town planning scheme area	Section 88 of Ordinance 15 of 1986	Department Developmental Local Government and Housing (Approval)
Declaration of a municipality as an authorized authority		Declaration of a municipality as an authorized authority in terms of the Town Planning and Township Ordinance; and the Division of Land Ordinance.	Section 2 of the Town Planning and Township Ordinance 1986, Ordinance 15 of 1986. Section 3 of the Division of Land Ordinance 20 of 1986	Department Developmental Local Government and Housing (Approval)
Townships Board		When objections were received for applications submitted in terms of Physical Planning Act 88 of 1967, Ordinance 20 of 1986, Act 22 of 1919	Ordinance 15 of 1986	Department Developmental Local Government and Housing (The recommendation of the Township Board is submitted to the MEC, the Dept then issue an approval or a permit)

Table 3: Continued.

TYPE OF APPLICATION		DESCRIPTION	RELEVANT LEGISLATION	AUTHORISING AUTHORITY
PROVINCIAL LEVEL (North West Province)				
Public resorts		Establishment of Provincial public resorts	Ordinance 18 of 1969	Provincial Government
Township establishment		Township Establishment in terms of Annexure F	Annexure F of the Black Communities Development Act 4 of 1984	Provincial Government
LOCAL MUNICIPALITY LEVEL				
Township establishment		Township establishment applications in the former Transvaal areas in North West Province	Town Planning and Township Ordinance 1986, Ordinance 15 of 1986 and regulations	Relevant municipality (Approval)
Township establishment		Township establishment applications in the former Northern Cape areas in North West Province	Ordinance 15 of 1985 (Cape of Good Hope) and regulations	Relevant municipality (Approval)
Rezoning		Change of land use stipulated by a town scheme	Ordinance 1986, Ordinance 15 of 1986 and regulations and applicable local town schemes, regulations and by-laws.	Relevant municipality (Approval)
Subdivision of land		Subdivision of erven within the town planning scheme area of local authorities	Ordinance 1986, Ordinance 15 of 1986 and regulations and applicable local town schemes, regulations and by-laws.	Relevant municipality (Approval)
Road closures		Approval of municipal road closures	Local government ordinance 17 of 1939	Local Government
Park closures		Approval of municipal parks closures	Local government ordinance 17 of 1939	Local Government

Figure 1: Spatial complexities of the LUM system – Madibeng Local Municipality example. (Source: Retief and Cilliers, 2015, p. 575 [1].)

The recent approval of SPLUMA [6] and its Regulations [7] will address most of these problems. As mentioned above SPLUMA and its regulations still need to be promulgated. Each province will also have its own SPLUMA and Regulations. Each municipality will either have a Municipal Planning Tribunal (MPT) or be part of a Joint Municipal Planning Tribunal (JMPT) [6]. Local Municipalities (LM's) will formulate and publish its own policies for a MPT or JMPT. Of importance in SPLUMA [6], [7] is the composition of the tribunals that will not include any political representatives that will enhance the autonomy of such structures.

Fig. 2 shows the benefits of a well-functioning Land Use Management System [22]. SPLUMA as a Tool for Spatial Transformation is well covered in the South African Cities Network [23]. SPLUMA will be addressing the transformation of the LUM domain in the following context:

- SPLUMA defines each element of the planning system from strategic spatial planning to management of land development and its interrelated links between spatial planning, development planning and land-use management.
- It consists of legislative principles planning guiding normative direction to spatial and LUM.
- It addresses based on planning principles fragmented and unsustainable spatial development patterns within spatial systems.
- It creates a single, integrated legal system guiding spatial planning and LUM in a uniform fashion. The complexities as included above are thus addressed in an integrative fashion.
- SPLUMA specifies the role of each sphere of government involved in spatial planning, spatial development and LUM [23].

3 STRATEGIC ENVIRONMENTAL MANAGEMENT TOOLS RELATED TO LUM

Because many environmental management tools engage with strategic planning and have a strong spatial dimension they relate strongly to the LUM system. South Africa has taken the lead in the development and implementation of many of these tools, such as conservation planning (C-Planning), environmental management frameworks (EMFs) [2] and strategic environmental assessment (SEA).

South Africa has a long history of project level environmental impact assessment (EIA), which has a direct relation to applications for land-use change and/or re-zoning. Fig. 3 provides a summary of the extent of strategic environmental management tools in South Africa, while Fig. 4 shows that around 76% of South Africa has been covered spatially. The main message is that local municipalities have taken a strong lead in terms of environmental management tool development. Since LUM is a local mandate this is particularly promising, because it suggest that significant potential exist to integrate LUM and environmental management at local level. In terms of strategic environmental management tools three tools have particular relevance namely, SEA, EMF [2] and C-Planning.

SEA was the earliest strategic tool introduced in South Africa during the mid-1990s. Since then various SEA guidelines have been developed [25]–[27] reflective of the extensive practice that has emerged.

Internationally SEA is basically understood as the assessment of strategic level actions such as policies, plans or programmes [27]. However, in South Africa SEA has been understood as much more of a planning tool as well, not only an assessment tool [28]–[30]. This broader understanding has led to it being aligned well with the planning system.

Figure 2: Benefits of a well-functioning LUMS [22].

Figure 3: Extent of the application of strategic environmental management tools. (Source: Retief and Cilliers, 2015, p. 577 [1].)

Figure 4: Extent of EMF and C-Planning in South Africa. (Source: Retief and Cilliers, 2015, p. 576 [1] and Cilliers and Retief [2]. Refer also to Cilliers and Retief [24].)

In this regard the planning legislation even makes explicit reference to SEA, for example White Paper on Spatial Planning and Land Use Management of 2001 [18] as well as the Municipal Planning and Performance Management Regulations of 2001 [31]. The Spatial Planning and Land Use Management Act (2013) [6] and [7] provides for the inclusion of a strategic assessment of environmental pressures and opportunities within the municipal area including the spatial location of environmental sensitivities. In terms of SEA practice between 1996 and 2003 more than a third of SEAs were planning related. The link between planning and SEA has also been widely discussed and debated in various literature [33]–[36]. The challenges for the SEA in relation to LUM system are defined by Rossouw and Retief [33] and Retief and Cilliers [1] as follows:

- expanding and refining the legislative basis for SEA;
- preparing clear guidance on the integration of SEA with LUM;
- reviewing the SEA system to identify barriers to SEA performance; and
- improving professional capacity to apply and implement SEA.
- SEA should be aligned with nationally and locally defined sustainable development objectives;
- SEA should form an integral part of the planning process to avoid duplication and enhance effectiveness;
- SEA should address the entire planning process by including a management, implementation and monitoring plan;
- SEA can contribute to a decision-making framework by establishing limits of acceptable change, thresholds, sustainability criteria and indicators; and
- SEA should fit the purpose for which it is applied to avoid it becoming an additional burden in an already complex planning process (refer also to Retief [37], [38], DEAT [39], DEA [40]).

EMF is different to SEA in that it enjoys an explicit legal mandate in terms of NEMA and relevant EMF Regulations (GNR 547) with accompanied guidelines [40]. There has been a difference in the interpretation of the exact purpose of EMF but there is general agreement that it should provide a spatial understanding of environmental sensitivity and that this information should inform both spatial planning in the form of SDFs and project level EIA applications. Recent research by Cilliers and Retief [2] shows that municipalities have been the main drivers for EMF development which is surprising since EMF is a provincial and national mandate. One particular area of confusion in terms of the relationship between EMF and LUM mandates is the use of the term ‘land use’ in the aim of EMF described in the regulations, namely:

“Environmental management framework” means a study of the biophysical and socio-cultural systems of a geographically defined area to reveal where specific land uses may best be practiced and to offer performance standards for maintaining appropriate use of such land.

Since NEMA regulates ‘activities’ and not ‘land use’ this is clearly problematic. The national Department of Environmental Affairs has however explained that they used the term land use in referring to the use of land and not land use as in the rights on land. Apart from the seemingly confusing mandate, research on the quality of EMF practice suggests following challenges for EMF in relation to LUM (refer also to Retief [35], Retief et al. [36]).

- **Conflicting mandates:** The mandate for EMF is vested at provincial level while LUM is essentially a local government function (as confirmed in the Constitutional Court Ruling of 18 June 2010) and SPLUMA [6], [7], [23]. The challenge therefore

is to integrate EMF outcomes with SDFs and other LUM policies at the local level as provided for in SPLUMA (2013) [6], [7].

- Defining sensitivity: A common definition and methodology is required to deal with sensitivity in EMFs. This will enable comparison as well as the integration of different EMFs.
- Dealing with public participation: EMFs could potentially benefit greatly by integrating the public participation components with IDP, SDF and LUM processes.

The third strategic environmental planning tool to consider is so-called C Planning or Biodiversity Planning, which is more of a methodological and less policy driven tool. This is because C-Planning is mainly understood as a particular method in conservation biology and not a legal tool per se. The aim of C-Planning is to identifying areas of critical biodiversity, developing a strategy/plan to protect these areas, aligning the strategy with existing planning tools and frameworks and implementing the strategy.

C-Planning is applied though the application of the systematic conservation planning method, which is strongly GIS based [40]–[44]. The method relies strongly on the identification of conservation targets and strategies to achieve these targets. However, due to the lack of an explicit legal mandate questions have been asked in terms of the contribution of these plans to decision making and their actual effectiveness [45]–[50]. Therefore, C-Planning is viewed as mainly an information tool. It is a concern that according to Knight et al. [49] and Knight and Cowling [50]) only one third of the conservation plans (globally) published between 1998 and 2000 were implemented, referred to as the so-called ‘research-implementation-gap’ (Knight et al. [49], Knight and Cowling [50]). It is understood that the way to improve the effectiveness of C-Planning in terms of influencing decision making is via its integration with the LUM system and specifically SDFs. This has been a particular point made by the South African National Biodiversity Institute (SANBI) in 2004, who highlighted several challenges with regard to its integration with LUM. Basically, conservation targets identified though C-Planning need to be incorporated with the strategies land development objectives/targets contained in local SDFs. However, it remains hard to see how this will be successful without an explicit legal mandate to do so (refer also to Pierce et al. [51], Knight and Cowling [52], Knight et al. [53], Gibson et al. [54]).

Finally, the integration of project level EIA with land-use change decisions has been an ongoing debate in South Africa for almost three decades. Currently it is well understood by the environmental assessment as well as planning professions that EIA and land-use change applications happens in terms of different mandates with decision making vested at different sphere of government. Moreover, it is interpreted that EIA regulates ‘activities’ described in the EIA regulations and that land-use change relates to ‘land use’ rights described in title deeds and/or town planning schemes (Land Use Schemes). However, the evolution of EIA from a more conservation focussed tool dealing with the biophysical environment towards a tool geared more towards dealing with sustainability and in the case of South Africa, specifically dealing with section principles described in NEMA, has made its mandate very broad and potentially overlapping with LUM (refer to Wood [55], Retief et al. [56], Kidd and Retief [57], Retief and Kotze [58], Kidd [59]).

Dealing with the integration of EIA and LUM processes is also an area of concern especially in relation to the general aim of government to improve efficiency in decision making. The publication of the Spatial Planning and Land Use Management Act (2013) [6], [7] explicitly stresses the need for process efficiency both in its objectives and normative principles [23]. It states that the objective of the Act is *inter alia* to “provide for a framework

for spatial planning and land-use management.....to provide for a framework for policies, norms and standards for spatial planning and land use management....”

Although EIA has in the past been blamed for delaying development, recent research [60], [61] suggest that LUM authorisations takes significantly longer than environmental authorisation processes (a matter which is to be addressed in the SPLUMA (2013) [6], [7]). This might be because the EIA systems at this stage seem to be less complex, governed by a single Act (excluding mining) while the LUM system is in process of transformation through SPLUMA [6], [7] while the different provincial SPLUMA's is being formalized. At this stage and during the migration to the new spatial planning, development planning and land-use management system, LUM will still remain disjointed (Tables 1, 2 and 3). It is difficult to see how process alignment and integration could be achieved successfully until SPLUMA with its new system has been promulgated.

4 CONCLUSION AND WAY FORWARD

This chapter explains and sets out various challenges to municipalities in migration to the new LUM system as provided for in SPLUMA. It should be noted that there are several challenges that need to be addressed in the alignment and integration of spatial (LUM), transport and environmental management. The integration possibilities that are being provided for relate to strategic and planning alignment and integration and not so much related to process integration especially on project level.

This opportunity is being provided for in SPLUMA [3], [5] with the emphasis on provisions related to:

- The new framework for spatial planning and land-use management applicable to all spatial systems.
- The defined relationship between the spatial planning and land-use management systems and related kind of planning.
- The inclusive, developmental, equitable and effective planning at different spheres of government.
- Provision of a framework for monitoring, coordination and review of the spatial planning and land-use management system.
- Provision of a framework for policies, principles, norms and standards for spatial development planning and land-use management.
- Addressing of past spatial regulatory processes and imbalances.
- Promotion of greater consistency and uniformity in application procedures and decision making by authorities responsible for land-use decisions and development applications.
- Provision for the establishment, functions and operations of Municipal Planning Tribunals.
- Provision for the facilitation and enforcement of land use and development measures.

The abovementioned new focus of LUM, provide for a new and improved interface with environmental management. The development of various related environmental management tools described in the previous section provides excellent opportunity to strengthen the interface between the environmental and LUM, as also promoted by SPLUMA [6], [7], [15], [62], [63]. However, in order to take full advantage of the potential contribution of environmental management to LUM, Retief and Cilliers [1] suggest that policy, procedural and institutional integration will be required, as also argued throughout this chapter. This

seems particularly achievable since the principles of NEMA and SPLUMA seems to be well aligned. Moreover, the process and institutional cooperation seems to be improving, especially with the gradual introduction of SPLUMA. However, it will be difficult to fully achieve and optimise the interface between environmental management and LUM until such time as the planning profession has fully migrated to the new LUM system as provided for in SPLUMA.

One of the challenges after the promulgation of SPLUMA (2013) will be the opportunity to align all related policy, legislative and procedural practices between LUM an environmental management [63]. The planning profession is at present through its Professional Body (SACPLAN) in process of finalization of the professionalization of the profession in terms of competencies, standards, RPL, CPD, job profiling and work reservation. Perhaps this interface provides the opportunity to professionalise environmental management further than what is being provided for in terms of the South African Council for Natural Scientific Professions (SACNASP) (2003). However, in terms of the alignment of LUM and environmental management the foundation now exists to formalise this relationship and interface as dealt with above.

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