

Local land-use planning and the role of conservation: An example analysing opportunities

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South Africa is the world's third most biodiverse country. The system of protected areas, however, does not capture its biodiversity comprehensively. Local land-use planning processes, and the integration of spatial conservation assessments in these processes, have been proposed as an effective approach to conserving biodiversity outside of protected areas. However, an understanding of the day-to-day processes in local government and the role conservation does or could play, is lacking. We used social marketing, a strategic and analytic approach to influence people's behavioural choices, to investigate why biodiversity conservation maps have failed to provide the biodiversity protection envisaged and how land-use planners could be persuaded to use the maps effectively. We interviewed 24 officials in six Eastern Cape coastal municipalities. We found that in large municipalities the maps were used by environmental units, whereas in intermediate and small municipalities they were used primarily by the consultants that prepare municipal planning documents. The land-use planning system was not fully functional, because of a lack of capacity and importance accorded to the issue. We could not identify any benefits that land-use planners might perceive in using the maps that directly related to conservation. We found that the younger generation of officials showed less sensitivity to biodiversity concerns. Furthermore, we found the relationship to the political hierarchy to be pivotal. For conservation to succeed, new approaches – for example engaging with the land-use planning domain to include conservation assessments – will be necessary. Including political actors in the processes is crucial.

Introduction

South Africa is ranked as the globe's third most biologically diverse nation.¹ Although South Africa has an extensive system of protected areas, these areas do not represent its biodiversity comprehensively.^{2,3} Local land-use planning procedures are therefore increasingly being recognised as a strategic way for the conservation sector to influence land transformation, a major driver of biodiversity loss.^{4,5} Scientists have used conservation assessment software to develop maps that indicate which areas are most valuable for biodiversity protection for many parts of the world. One aim of developing these maps is to steer development away from areas with high biodiversity value.^{6,7} Most of these conservation assessments are conceptualised in the systematic (target-driven) mould⁸ and framed in terms of biodiversity concepts. However, while conservation assessments become increasingly precise, knowledge of how decision-makers at local government level perceive or use these products is negligible.^{9,10} Such knowledge is pivotal for effective implementation of conservation and other environmental priorities.

Most conservation assessments are never implemented, largely because the researchers who conduct the assessments fail to become involved in the, often messy, social processes that are required for effective implementation.¹¹ However, in the Subtropical Thicket Ecosystem Planning (STEP) project, a conscious effort was made to tailor conservation assessment products to the needs of end-users in an effort to mainstream them into routine decision-making by land-use planning agencies at the local (municipal) government level.^{6,12} STEP was located in the Western and Eastern Cape Provinces of South Africa, and was aimed at identifying priorities and implementing actions for safeguarding subtropical thicket ecosystems. These ecosystems are rich in endemic plant species and comprise the southwestern part of the globally recognised Maputland-Pondoland-Albany hotspot.¹³ Since 2009, a new product – the Eastern Cape Biodiversity Conservation Plan (an entirely computer-based system) – has complemented the efforts by providing a conservation assessment for the entire Eastern Cape Province, including the STEP conservation priorities.¹⁴ However, the pace of development along the coast in the Eastern Cape in recent years¹⁵ suggests that the promise of the products has not fully been achieved.

Here we report on research to determine if and how the systematic conservation assessment maps (hereafter conservation maps) are being used by municipal land-use planners and to assess why efforts to mainstream them for biodiversity conservation appear to be failing. In line with the social marketing approach we are using,¹⁶⁻¹⁸ we ultimately aim to find avenues to positively influence this situation.¹⁹

Social marketing is an approach to promote behavioural change and can be defined as

The application of commercial marketing technologies to the analysis, planning, execution and evaluation of programs designed to influence the voluntary behaviour of target audiences in order to improve their personal welfare as well as that of their society.^{20 (p. 7)}

The primary tenet of marketing is customer orientation: the imperative to see the product from the perspective of the customer. Marketing's fundamental paradigm is exchange theory, that is, what value can the marketer, in this case the conservationist, provide to the customer in exchange for convincing the customer to adopt the behaviour marketed. This project was, therefore, not limited to the description of the current situation. The entire investigation endeavoured to identify from the status quo how sound insights can be drawn to guide successful future interventions – a process entitled 'customer research' in marketing terms. We worked with

land-use planners concerned with applications for land-use change in municipal administrations. The behaviour we envisaged marketing was the use of conservation maps for assessing all land-use change applications. The study we present here is exploratory and does not claim to provide a representative or complete assessment of land-use planning processes in the Eastern Cape Province. We do, however, provide insights into the day-to-day land-use planning processes that can be used to further behavioural change toward consistent use of the conservation maps.

We worked with six municipalities that are situated along the relatively unspoiled coastline of the Eastern Cape Province. The coastline is under pressure from urbanisation driven by migration of wealthy people seeking improved lifestyles and impoverished people seeking employment.¹⁵ The municipalities encompass two 'metropolitan' areas (Nelson Mandela Bay and Buffalo City) with comparatively high levels of capacity, two 'small' municipalities (Great Kei and Koukamma) with very low levels of development and capacity and two 'intermediate' municipalities (Kouga and Ndlambe) with intermediate levels of development and capacity.

Land-use planning in South Africa

As in many other countries, the municipal sphere holds the primary decision-making powers on land-use and development planning under South African law,²¹ albeit with various obligations for consultation and compliance with provincial and national legislation. The decisions are taken by locally elected councillors, usually based on a comprehensive technical assessment conducted by land-use planning officials employed by the local municipality.

South Africa has highly developed environmental legislation: environmental protection is enshrined in the constitution and various laws and provisions have been enacted. A comprehensive and comprehensible review of the legal obligations of municipalities to act for environmental sustainability is available online in the STEP handbook.²² Here we concentrate on a number of details pertaining to the actual implementation of reactive statutory land-use planning that emerged as critical from our interviews.

Legislation for Environmental Impact Assessments (EIAs) regulates consideration of environmental concerns in spatial planning processes and covers substantive developments as well as small developments. The regulations pertain to specific activities as set out in an annex²³: for example, the 'Construction or earth-moving activities in the sea or within 100 metres inland of the high-water mark of the sea, in respect of ... (f) buildings...; require a basic assessment'. Although the legislation on EIAs has subsequently been amended, because we are discussing an example of the day-to-day planning processes, the lack of capacity persists and our arguments remain valid. A landowner would ask the municipal authorities or land-use planning consultants whether an application for land-use change would trigger EIA regulations. If so, then before landowners can submit an application for land-use change to the municipality, they must obtain a Record of Decision from the relevant provincial authority. The final permission for the land-use change is then decided and issued by the municipal council, subject to the requirements of the Record of Decision issued by provincial services.

Nearly all land-use change applications in the six municipalities are regulated by the *Land-use Planning Ordinance 15 of 1985* (LUPO). Under LUPO, the municipality, i.e. the council, takes the decision to grant or refuse the permission for changing a land use. Cooperation with other spheres of government depends on the particulars of each application.

Municipalities are also obliged to conduct forward planning for the development of the municipality. In a bottom-up process, the needs of the population are incorporated in an 'Integrated Development Plan' which is complemented by a technically informed 'Spatial Development Framework' (SDF). These SDFs are usually commissioned by the municipality and compiled by land-use planning consultants. These consultants provide a detailed report and spatial plan, including the technical details for possible future developments in the municipality. SDFs are one of the key sources of information used by land-use

planners for preparing the decision proposal for council deliberation; the SDF is revised annually or bi-annually and adopted by council. We wish to highlight here that the SDF is one among many inputs into land-use planning processes: the integration of biodiversity information in these documents alone is insufficient to achieve conservation goals.

Methods

We started the project with a desktop study exploring the legal and social background to land-use planning procedures in South Africa's Eastern Cape Province.^{21,22,24,25} We conducted seven extensive background interviews of several hours each with individuals who are or were actively involved in post-apartheid land-use planning procedures, but were not members of our target group, to inform the interview guide. Next we interviewed 24 officials that were involved in the administration of land-use changes in their respective municipalities, namely 13 land-use planners, 5 members of the administrative hierarchies, 3 municipal environmental officers and 3 individuals heading the unit in which land-use planning was situated. Considering the limited number of employees concerned with land-use planning, we attempted to interview all individuals and added further expertise (e.g. from the head of the land-use planning unit of the Eastern Cape provincial government) to confirm these findings. Hereafter, we refer to all interviewees as land-use planners.

The interviews, lasting between 30 min and 90 min, took place in the land-use planners' offices between May and September 2008. All interviews were conducted in English, the officials' working language. The interviews were transcribed with permission. Interviewees were ensured confidentiality and appropriate measures of data safety. We enquired about their age, cultural background (White, Coloured or Xhosa culture), degree of training, computer literacy, and whether they used GIS in their work. We assessed their degree of awareness of STEP and other conservation maps, and enquired whether they had used, decided to use, or contemplated using the maps. We then probed a number of aspects of the land-use planning procedures in the municipalities that had emerged as essential from the background interviews. Particularly, we assessed the organisational structures of land-use planning units, and what legal texts land-use planners used. We identified the official responsible for subjecting an application to an EIA process and investigated if other departments were involved in commenting on the application. We also asked how frequently interviewees believed illegal land-use changes occurred and if these transgressions were prosecuted. We enquired where land-use planners sought advice.

Then we probed if councillors exerted direct influence on land-use planners in order to shape the content of the decision proposal that land-use planners drafted, and how land-use planners perceived their council's reactions to refusing an application. We explored if land-use planners considered being in the 'profession of their dreams', what they were appreciated for in the workplace, and what they considered being the most important problem in their job.

We used qualitative techniques for analysing data. Furthermore, we used discourse analysis²⁶ to infer from the texts the degree to which land-use planners were familiar with the legal texts they mentioned, and whether they held a positive, indifferent or negative attitude towards biodiversity issues.

Results

Who are the people performing the land-use planning function?

The first aim of our project was to gain an understanding of the people and processes operating in the real-world context of municipal land-use planning.²⁰ We noted a clear difference between the small and intermediate municipalities on the one hand, in which the posts are mostly filled by experienced and predominantly White officials (three of four municipalities), and the metros on the other hand, in which predominantly younger and Xhosa and Coloured employees work. The average age of Xhosa or Coloured land-use planners was 32 years, and of White land-use planners was 52 years. Although the metros

did have trained land-use planners in their employ, finding additional qualified personnel was difficult²⁷; in one of the metros, only one-third of the positions was filled. Neither intermediate nor small municipalities employed officials that had received tertiary-level training in land-use planning. In intermediate municipalities, only one official performed the land-use planning function; in small municipalities officials combined the planning function with various other tasks. All land-use planners we interviewed were computer literate and used or had used some form of GIS in their work. Invariably they reported on an exceedingly high workload but nearly all land-use planners indicated a high degree of identification with their profession.

Half of the 24 land-use planners we interviewed held positive attitudes towards biodiversity, 38% were indifferent while only three held critical views. However, while some experienced, predominantly White land-use planners stated unprompted that they considered themselves 'protectors of the environment', the younger – mostly Xhosa or Coloured land-use planners – expressed less understanding and concern, and mostly considered biodiversity irrelevant for their work.

Are the conservation maps being used?

Land-use planners in the metros and in intermediate municipalities indicated clearly that their respective units had adopted the conservation maps. In the metros, the respective environmental units had produced a specific conservation plan for their metropolitan area that is integrated in land-use planning procedures. Applications are assessed by these environmental units that oversee biodiversity considerations in the planning process. In intermediate municipalities, however, the responsibility of actually using the conservation maps is deferred: consultants had integrated the conservation maps into the municipal SDFs but land-use planners did not use nor consider the conservation maps in their routine work. Municipal environmental officers were normally not included in the land-use planning process. Conservation concerns were only represented in the process via inclusion in the SDF document, which does no more than inform land-use planning. In the small municipalities, land-use planners were vaguely aware of the conservation maps but had not considered using them.

Do land-use planning processes effectively support conservation?

Although land-use planners were aware of the relevant legislation and supporting documentation, the depth of understanding for the application of the laws varied considerably. In the metros, the land-use planning unit in cooperation with the environmental unit, made the decision as to whether a land-use change application triggers an EIA. In intermediate and small municipalities, the land-use planners took these decisions more or less alone. These decisions, interviewees surmised, were guided either by 'the relevant SDF' or an unspecified 'legal text'. Both statements are clear indicators for uncertainty: an SDF has no legal status regarding EIA requirements.^{21,27} Furthermore, in cases where an EIA process was undertaken and a Record of Decision issued by the provincial administration, several interviewees mentioned, unprompted, that documentation can be defective and that there is usually no or little follow-up from the municipality as to whether the Record of Decision conditions were fulfilled.

All land-use planners considered illegal land-use changes to be highly prevalent and the enforcement of legal requirements to be rare or non-existent. Some interviewees mentioned that illegal land-use changes go unnoticed unless a member of the public raises a complaint. Land-use planners in the small municipalities did not perceive this to be a pressing problem.

Land-use planners in large municipalities indicated their administrative hierarchy or colleagues as a source of advice when encountering difficulties in assessing applications; in small and intermediate municipalities land-use planners sought advice from consultants.

What role do councillors play?

Engendering behavioural change in individual actors depends on the societal context in which they operate. How land-use planners perceive their jobs and their role in the municipality depends partly on their interaction with the political sphere, i.e. the influence councillors have on the land-use planning processes. All land-use planners confirmed that at times councillors sought to influence the land-use planning processes either directly or through the land-use planner's administrative hierarchy. Land-use planners reported that proposing to refuse developments was usually not received positively by councillors. A number of land-use planners indicated, unprompted, that they 'have to be seen as pro-development' or that refusing an application requires considerably more effort than granting permission. Several land-use planners reported on situations in which their negative proposals were officially or unofficially rejected by councillors and the land-use change granted; none referred to examples where councillors rejected approval recommendations. Several examples where the land-use planning function was entirely sidestepped to enable developments were mentioned spontaneously. This situation appeared to be less pronounced in the small municipalities, where controversial issues were discussed before land-use planners draft the recommendations to council and where the administrative structures had a function of guiding councillors in their decision-making.

Despite these difficulties, nearly all land-use planners indicated that they were working in the 'profession of their dreams'. However, nearly all also expressed having no possibilities for promotion or personal development in their careers; few felt appreciated or otherwise rewarded; all indicated having a workload that exceeded their capacity and admitted to missing specific tools to do their job appropriately. In the metros, land-use planners referred primarily to a lack of planning policies and adequate maps. Land-use planners in intermediate and small municipalities referred to a lack of support staff, know-how and technological tools, for example the lack of up-to-date GIS data, PCs able to quickly handle the amount of data required, or colour printers.

Discussion

Although the link between biodiversity conservation and land-use planning has been appreciated for decades,²⁸⁻³⁰ the values, norms and behaviours of land-use planners are surprisingly seldom researched, with notable exceptions.^{9,10} However, how land-use planners perceive and act out their role in the planning process impacts profoundly on the development footprint.³¹ In line with the social marketing approach we used, the purpose of this study was to provide an insight into how conservation concerns are perceived and managed by land-use planners. We focused on the requirements for influencing behavioural change in land-use planners towards using the conservation maps – the overall aim of the social marketing approach we have adopted.

The difficulty of finding suitable personnel to fulfil the land-use planning function is in line with a general lack of capacity at local government level in South Africa.³² However, the pattern we found in our sample – that older 'more concerned' land-use planners are being replaced by a new generation with less sensitivity to biodiversity – suggests a projected dwindling of support for biodiversity conservation issues.

Overall, land-use planners clearly perceive the benefits of using conservation maps. However, the responsibility of actually using them lies with the environmental units in the metros or with the consultants that draft SDFs in intermediate and small municipalities. Deferring this responsibility is a barrier to the behavioural change we seek. Our background interviews and personal contacts with consultants confirm that the conservation maps and associated products are regularly used and integrated in drafting SDFs and other municipal documents. However, in all municipalities, it is the land-use planners that oversee applications for land-use change. Therefore, the degree to which land-use planners perceive biodiversity protection as being part of their personal duty will influence what information is used, highlighted and eventually prioritised in the decision proposal they draft.^{9,10,27}

Our survey results indicate that the land-use planning function, and therefore its protective role for biodiversity and the environment, is defective at several technical levels. Firstly, in intermediate and small municipalities, capacity constraints give rise to uncertainty about the applicability, for example, of the highly complicated EIA legislation. Other than large-scale and high-impact proposals, which obviously require an EIA and are under public scrutiny, the decision to trigger an EIA depends almost exclusively on the expertise of the land-use planners. If the details of the EIA regulations are unclear, EIA requirements for small applications may go unnoticed. Secondly, in the case of applications that did undergo an EIA process, neither documentation nor enforcement of the requirements and conditions laid out in the Record of Decision are guaranteed. Furthermore, in intermediate and small municipalities it is largely the decision of the land-use planners to seek the input of provincial and national governmental departments into the LUPO application process. These departments could exercise some form of monitoring or control over decisions of the local land-use planning, but the current practice is that it is the sole responsibility of the local level. A controlling function of such departments is therefore uncertain. As a result, the implementation of some of the legal mechanisms enacted to ensure that environmental concerns are considered in land-use planning and development are partly unreliable, leaving municipalities open to abusive practices by applicants or administrators. Such impaired functionality of the land-use planning processes clearly contributes to explaining the seeming lack of effectiveness of the conservation maps.

Combining this situation with the ageing cohort of land-use planners in intermediate and small municipalities, the difficulties of attracting qualified people to work in municipalities, and the lower consideration for biodiversity issues among younger, predominantly Xhosa and Coloured land-use planners, the potential for increasing indifference to biodiversity concerns in local land-use planning becomes obvious.

We conclude from our interviews that land-use planners clearly perform their duty in an environment that favours development, making the defence of conservation concerns extremely difficult.³³ Interestingly, the conservation maps are used by some land-use planners to counteract such influence by councillors. Indeed, one of the municipalities has entered into an agreement with the provincial authority that all applications have to undergo an assessment of their environmental impact by the relevant provincial departments, even when the EIA regulations are not legally applicable. We wish to emphasise that we are not referring to councillors complying with their duties as politicians in determining the desirability of a development on the basis of a sound technical assessment. We refer to situations in which decisions are at odds with legally prescribed provisions or previously adopted policies. For example, land-use planners drew our attention to two cases in which an urban edge, adopted by council, was simply later changed to accommodate major developments.

How can these insights be used to support conservation?

Social marketing is a strategic, proactive approach that should remedy conditions unfavourable for individuals and societies.^{18,20} Instead of only analysing the shortcomings described above, here we analysed how our findings offer opportunities for improving the use of conservation maps by land-use planners to protect conservation priorities. The conservation sector will need to provide land-use planners with convincing reasons why they should use and consider the conservation maps directly.

We found that the capacity in land-use planning and for using the conservation maps varied considerably among municipalities. The experiential background of individual land-use planners is highly variable. Offering general training courses for land-use planners is therefore unlikely to be attractive or effective. Also, training limited to biodiversity – or the environmental component of sustainability – is unlikely to attract much attention, as there is little perception of a need in this domain. We therefore propose a Trojan horse approach – to provide a service that will draw interest with the aim of extending the interest towards conservation content. We propose to engage with land-use planners of small and intermediate municipalities on an individual basis

in order to elaborate training modules in the land-use planning domain that respond directly to their needs, not primarily on conservation issues, but obviously including conservation maps. Considering the high workload of all our interviewees, any less engaged and targeted interventions would probably be unlikely to succeed. The informational needs in the land-use planning domain could thus be harnessed to guide land-use planners towards increasing the importance of their conservation responsibility.

Land-use planners need to be reached in a way that is supportive of the behavioural change goal.³⁴ In small and intermediate municipalities, all land-use planners turn to consultants if they need advice on land-use planning issues. It is only logical then, that pro-conservation oriented land-use planning consultants could be engaged to develop and provide such training. Moreover, this would help to create the trustful relationship necessary to address potentially controversial and intimidating issues like lack of competence.^{35,36} Limited training efforts or once-off interventions are highly unlikely to change behaviour, and multiple exposures to a message would be necessary to bring about lasting changes in behaviour.³⁷ Training should, therefore, be continued into a lasting tutorship by establishing a proactive system for cooperation driven by the tutors. Such a forum could have a triple function: to provide ongoing support, to enable communication between land-use planners and between municipalities and to serve as a feedback mechanism likely to support the behavioural change goal.³⁸

Most land-use planners expressed a need for better representation of their profession among councillors. This need can represent a dual opportunity for conservation: on the one hand, engagement with land-use planners can contribute to providing the recognition they need, and on the other hand, in order to make conservation protection at the local government level a reality, it will obviously be necessary to work with councillors.³⁹ If it were possible for the conservation sector to contribute not only to increasing land-use planners' awareness of conservation issues but also to increasing the status of land-use planners among councillors, then the perceived worth of conservation for land-use planners could also increase. Note also that, because of the deficiencies in the land-use planning system identified above, supporting the land-use planning function itself is likely to have positive effects on biodiversity protection.

There is a clear implication of these two of our key findings: (1) land-use planning processes are partly dysfunctional and (2) councillors are not supportive of the environmental protection function of land-use planning. Even if the conservation sector were completely successful in mainstreaming the use of conservation maps among land-use planners, it would not necessarily result in effective biodiversity conservation in land-use planning decision-making. Our results suggest that a land-use planner's capacity to act pro-conservation is limited by the influence councillors have on the role of land-use planning in the municipality. Several land-use planners indicated that this interference is at least partly a result of the lack of understanding of councillors for land-use planning fundamentals. Wilhelm-Rechmann et al.³⁹ have described how councillors relate to land-use planning and some of the obstacles to the appreciation of conservation issues are discussed by Wilhelm-Rechmann and Cowling.³³ Note that the recommendations provided above refer primarily to land-use planners; Wilhelm-Rechmann et al.³⁹ provide a similar analysis for councillors.

Therefore, we recommend that the conservation sector should engage with councillors as an extension to the engagement with land-use planners. The aim of this engagement would be twofold: firstly, the investigation and outcomes should increase the prominence of, and understanding for land-use planning, and secondly, it will be essential to understand councillor's perceptions of land-use planning and biodiversity issues in order to change land-use planners' behaviour.³⁹

Lastly, and logically, a third target group emerged from our research, namely the land-use planning sector itself. The approach we propose will ultimately necessitate engaging with the land-use planning profession as a whole by launching a much-needed discussion between the

conservation and land-use planning sectors about the role of biodiversity and environmental issues in land-use planning.⁴⁰

General conclusions

Overall, we have shown how the social marketing approach can be meaningfully used to strategically further conservation goals. We have described an example of how the barriers that prevent a behavioural change can and must be turned into opportunities for conservation where behavioural change is necessary to achieve conservation issues. This task must be approached from the perspective of those who need to change their behaviour to be successful.

We wish to re-emphasise that it is highly unlikely to be sufficient to assume that providing information will be enough to engage with land-use planners. The strength of the marketing approach and the reason for its success is the conscious search for an element that the target audience really needs or desires. 'Providing information' to an already overworked audience about an issue they feel is addressed by referring the responsibility to consultants is highly unlikely to be effective or even draw any attention. The question we raised in the introduction was: what value can conservationists provide to land-use planners? This 'value' is, of course, defined by what land-use planners perceive as such. We were clearly unable to identify any perceived needs of land-use planners, specifically in the conservation domain. Beyond their need for support in the land-use planning domain, we have identified a need for recognition and better representation of the land-use planning function among councillors. If conservationists want to combat the variety of obstacles to effective conservation action,^{39,40} they will have to simultaneously and effectively use all the tools that they have available in a concerted lobbying effort.

Specifically for our case study, we conclude that there is a combined problem of political influence and lack of capacity – the first being predominant in the large municipalities, the latter being dominant in the smaller municipalities. Engagement by the conservation sector in a mutually supportive relationship with the land-use planning sector is essential to provide the basis for effectively promoting biodiversity conservation in land-use planning processes.

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Authors' contributions

R.M.C. and A.W.-R. conceived the research. A.W.-R. designed the study, conducted the interviews and analysed the data. A.W.-R. and R.M.C. wrote the manuscript.

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