Ecosystem Services Assessment and Valuation in Regional Spatial Planning in Namibia – The Case of the Zambezi Integrated Regional Land-Use Plan

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Introduction

Namibia lacks a comprehensive and integrated spatial planning system. Between 1999 and 2005, the Ministry of Land Reform (MLR) commissioned regional land-use plans in eight of its then 13 regions. When compared with best practice examples, the resulting land-use plans lacked stakeholder participation, and failed to sufficiently integrate the different sectors.

To address these shortfalls, in 2007, the MLR started the project "Modelling Integrated Land-Use Planning". Guidelines and methodologies were developed for a new spatial planning regime at regional level. The concept of integrated regional land-use planning (IRLUP) was piloted in the //Kharas Region. After testing the IRLUP concept in another region, it was rolled-out to an additional three regions by the end of 2015.

In this new approach a strategic environmental assessment (SEAs) was integrated into the spatial planning process. The SEAs were carried out during the development of the land-use plans, with clearly defined links between the planning and environmental assessment processes.

In 2015, the MLR piloted the assessment and valuation of ecosystem services (ESAV) for the IRLUP/SEA in the Zambezi Region to further inform the planning process on the opportunities and constraints which occur in the region's main ecosystems.

This paper looks at the process of the IRLUP and SEA formulation and shares experiences and preliminary results of the ecosystem services assessment and valuation (ESAV), which was conducted after the IRLUP and SEA had been completed. Furthermore, it summarises results, limitations and difficulties encountered during this process.

The Zambezi Integrated Regional Land-Use Plan and SEA

The legal obligation to conduct an SEA for an IRLUP is derived from the Namibian Environmental Management Act (no. 7 of 2007). The Act requires the assessment of governmental plans, projects and programmes with regard to their environmental, social and economic impact.

The current process of conducting an SEA for an integrated regional land-use plan has its origin in the OECD DAC Guidelines on SEA (2006) and the MET regulations on environmental impact assessment (EIA). The SEA aims to ensure that environmental impact and sustainability aspects are considered thoroughly during the spatial planning process. The SEA findings then feed into the decision making process of suggesting land-use options.

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Sustainability is assessed by three guiding questions:

- Do the plans maintain environmental systems and minimize harm to the natural environment?
- Do the plans achieve long-term social upliftment that carries national benefits?
- Are the plans economically viable?

The land-use plan suggests land-use allocation based on three principles:

- Diversification of the regional economy with commercial agriculture, increased tourism and conservation and spin-off benefits from trade corridors.
- Support growth points.
- Protection of the environment and natural resources.

SEA findings on the Zambezi IRLUP

The SEA assessed the impact of sector activities and land uses on the environment. The assessment investigated to what extent biodiversity and ecological functioning, rangeland health, soils, hydrology, air quality, landscape beauty, livelihood and employment, human health, cultural heritage, social cohesion, infrastructure and economic development are impacted by land use activities.

Through the scoping exercise, the focus was set on livestock ranching, dry-land cropping and small-scale irrigation agriculture, conservation, wildlife, forestry, tourism, fisheries, urban growth, settlements, infrastructure and mining.

For each of these activities the SEA analysed and assessed the current situation and any planned programmes or projects. Furthermore, cumulative impacts, risks and conflicts with other sectors were identified. The SEA then provided recommendations for mitigation of the identified negative impacts.

Ecosystem services

During the preparation of the IRLUPs for the Kavango East and West Regions (2013-2014), some stakeholders expressed a lack of explanation and solid figures, on which decisions on land use allocation were based. The SEA did not provide convincing reasons, and was more focused on the environmental impact of suggested land uses of the IRLUP, rather than a holistic picture, including social and economic figures.

With the inclusion of an ecosystem services assessment into the SEA process, the MLR aimed to establish a more holistic, or, at least a multi-sector approach of the overall planning process. The identification of alternatives for land uses and the combination of ecosystem utilisation, supports the decision-making process for the arrangement of land-use allocation.

The MLR decided in 2014 to pilot the development of an ecosystem services assessment during the preparation of the SEA of the Zambezi Integrated Regional Land-Use Plan.

The key points of broadening the scope of the assessment to include ecosystem services are to achieve (i) methodological consistency, distinguishing between expert and stakeholder inputs;

(ii) a framework for quantification of ecosystem services, (iii) identification of beneficiaries of ecosystem services, (iv) quantification of the social and/or economic values of ecosystem services, (v) identification and quantification of development opportunities and constraints and, (vi) the identification of winners and losers when assessing different development options, including quantification of these.

The concept follows a nine step approach to ecosystem assessment (SAIEA, 2016). The steps are: (1) to define the boundary of the study area, (2) to identify and map the ecosystems, (3) to describe potential linkages with neighboring areas, (4) to identify and quantify the ecosystem services, (5) to identify the (groups of) stakeholders of each ecosystem, (6) to quantify the value for each group of stakeholder(s), (7) to describe a baseline situation and the trends of ecosystems services, (8) to identify the regulatory or policy framework applicable, and (9) to identify gaps in the information and proxy values for these.

The practical application proposed (SAIEA, 2016), is the creation of a table which lists the services provided (provision, regulation, support, culture, livelihood and wellness) by each ecosystem and collect information on beneficiaries, value, current state, trends, opportunities and synergies, threat and antagonisms, key drivers of change and the policy adjustment to be considered for each service.

Results of ecosystem service assessment and valuation (ESAV)

The ecosystem services and valuation could not be aligned with the Zambezi Region IRLUP and SEA process. The ESAV was conducted as a post-planning exercise to develop a method for ESAV for the Namibian IRLUP/SEA process and document lessons learned.

The ESAV has identified the main ecosystems in the planning area and the services they provide. For each ecosystem the estimated value, beneficiaries, current state and trends of usage of the services were identified. Furthermore, opportunities, synergies and threats as well as drivers of change and potentially necessary policy adjustments to preserve the ecosystems, were described.

The total economic value (TEV) methodology, developed by Ministry of Environment and Tourism (MET) was used, to value direct use, indirect use, option, and non-use values. Only information for direct use of services were found, which were measured as economic value, or the contribution to net national income. The valuation of indirect use values and even more so for option and non-use values is a scientific exercise. It can be complicated and is mostly time- and resource intensive. The monetary valuation of these values is generally subject to discourse.

One of the results of the assessment were the estimated economic values of ecosystem services across the region, focusing on the provisioning services in the main ecosystems.

The highest annual economic direct use value (2013 exchange rates) for the Zambezi Region was found with tourism and recreation US$ 22.61 million. Crop production valued at US$ 15.23 million and fuel and energy production achieved the third highest value at US$ 12.46 million. The livestock sector totaled at US$ 2.73 million. The high values of fuel and energy services can be attributed to the reliance of rural households on the usage of firewood as the main source of energy.

The ESAV does show the values which can be derived from the ecosystems and, probably, provides a more accurate picture of the usage of the natural resources in the Region and its ecosystems. During the planning process, regional stakeholders put most emphasis on the importance of the livestock sector, seeking more land allocation to this service. This is in contrast to the monetary values which were elaborated during the ESAV, which show economic the importance of the tourism and recreation sector.

Challenges and lessons learned from the ecosystem services assessment and valuation

One challenge in the assessment of the ecosystem services is the difficulty to find current data on some aspects, such as current livestock numbers, hydrological records for the Zambezi River, and extent of flooding. Discussions were held with the relevant authorities to agree on the most reliable data for these aspects.

A general challenge in Namibia is a lack of expertise in the field of resource economy. There are only a few experts in the country, and they are not readily available to conduct an ESAV for land-use planning. In this stage, it might therefore be more useful to focus on non-monetary values, which do not require expertise in resource economy.

However, the demand for the quantification was voiced by the stakeholders. So far, and this has become true in the Zambezi Region, the SEA is negatively perceived by many stakeholders as an obstacle to the development and allocation of land to certain land-use types. The SEA of integrated regional land-use plans in Namibia are seen, by some stakeholders, to focus mainly on the environmental aspect of land use allocation. In their opinion the SEA fails to recognise the economic and social contribution of the main land uses, livestock and subsistence farming, to their livelihood. Through the ESAV there will be added information on the resource usage by the whole population in a region, and raising awareness how people depend on ecosystem services for their livelihood.

Outlook

Due to administrative reasons, the ESAV could not be conducted in time to inform the Zambezi IRLUP and SEA. Nonetheless, the methodology developed and tested in the Zambezi Region will be applied in future IRLUPs of other regions. In the absence of legally binding regulations for the preparation of SEAs in Namibia, the MLR decided to include the ecosystem services approach as a mandatory method for the SEA of the land-use plan. The assessment of the ecosystem services is incorporated into the SEA process and will be conducted between the inception and the scoping phase of the SEA.

The role of ecosystem services for the wellbeing of the population and their ability to improve their livelihoods will become an integral element of the land-use planning and SEA process in Namibia.

References

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