ECONOMIC VALUATION OF LAND (EVL): CASE STUDY IN ZAMBIA

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Presentation layout

- Background
- Methodology
- Results
- Conclusion
- Recommendations

Background

- Sustainable land resource management is key to national economies;
- However, its contribution to national development and poverty reduction is often not recognized; evidenced by low investment in SLM;
- We consider an Integrated Financing Strategy (IFS) as a necessity for financing improved land management and rehabilitation initiates in Zambia;
- Therefore an initiative was launched to assess the economic value of land and costs of land degradation in Zambia

Main Objective

- To assess the economic value of land resources and associated benefits of sustainable land use practices in Zambia

Specific Objectives of the Study

- To conduct an economic valuation of land resources in a selected pilot site;
- To analyze the costs and benefits of specific sustainable land use options and investment strategies for the study area
- To identify specific opportunities for SLM investments

All this was to facilitate the process of integrating the study results into the national development planning processes and, propose a methodology for further work on EVL for land resources in Zambia

Study Methodology

Methodology adopted according to Noel and Soussan (2010) is based on:

- (1) Assessment or inventory of the distribution and inherent quality of land resources:
  - delineation of land use systems,
  - approximation of the spatial distribution,
  - classification of images using a maximum likelihood algorithm approach;
- (2) Analysis of ecosystem services and functions associated with the land resources and their role in the livelihoods of local communities (Schild 2010):
  - Categorization for each of land cover and associated land use categories,
  - Identification of livelihoods of communities through literature review, stakeholder consultation, key informant interviews and focus group discussions
  - Total economic value of land resources estimated by looking at both use and non-use value of the resources;

Methodology cont'd

- (3) Assessment of the principle degradation pressures on land resources and associated costs:
  - Stakeholder consultation
  - Review of secondary literature
  - Generation of a basket of roles of ecosystem services
- (4) Identification of sustainable land management policies and options:
  - Review of literature on land cover/land use systems and associated land degradation
  - Expert knowledge during onsite impact verification visits to selected areas
  - Stakeholder consultations - key informant interviews and focus group discussions
  - SLM options assessed based on expert opinions on the biophysical and socioeconomic circumstances

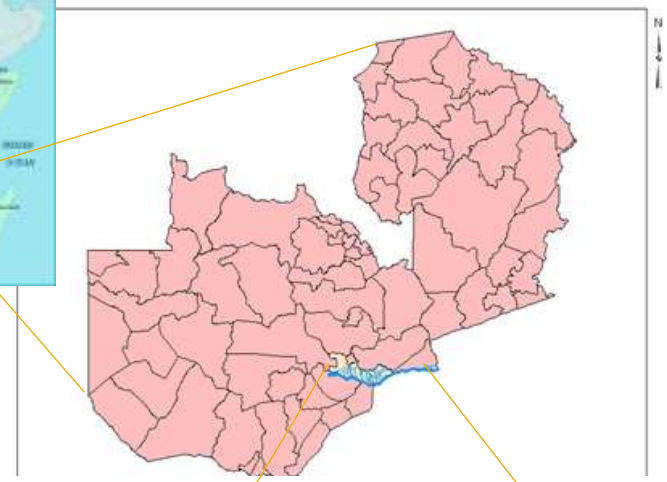
Data Sources

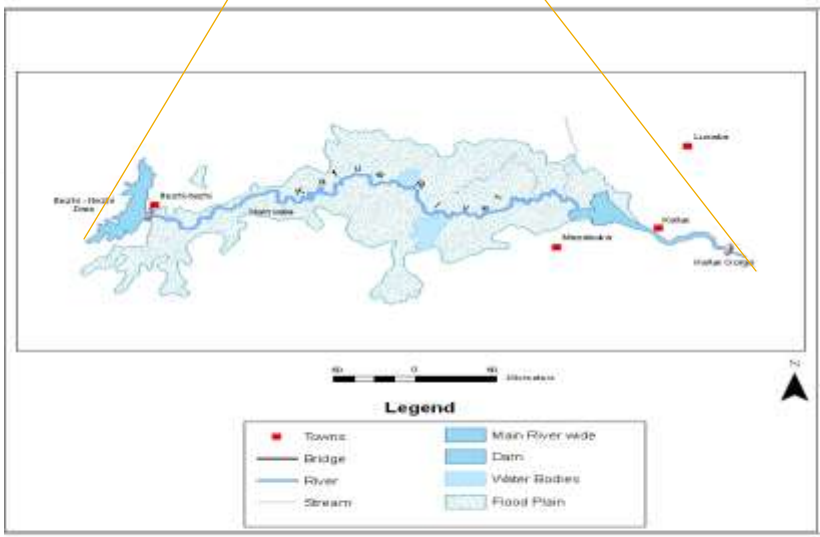
- (1) Local communities: traders, fishermen, farmers …
  - Group interviews
  - Focused group discussion
- (2) Key informants: Government agencies & local organizations and investors
  - MACO, METNR, ZAWA, WWF, LSWC, NCZ, Oriental Quarries, Reubex Construction
- (3) Site verification visits and direct expert observations
- (4) Secondary data from Government agencies, and CSO

Study Results

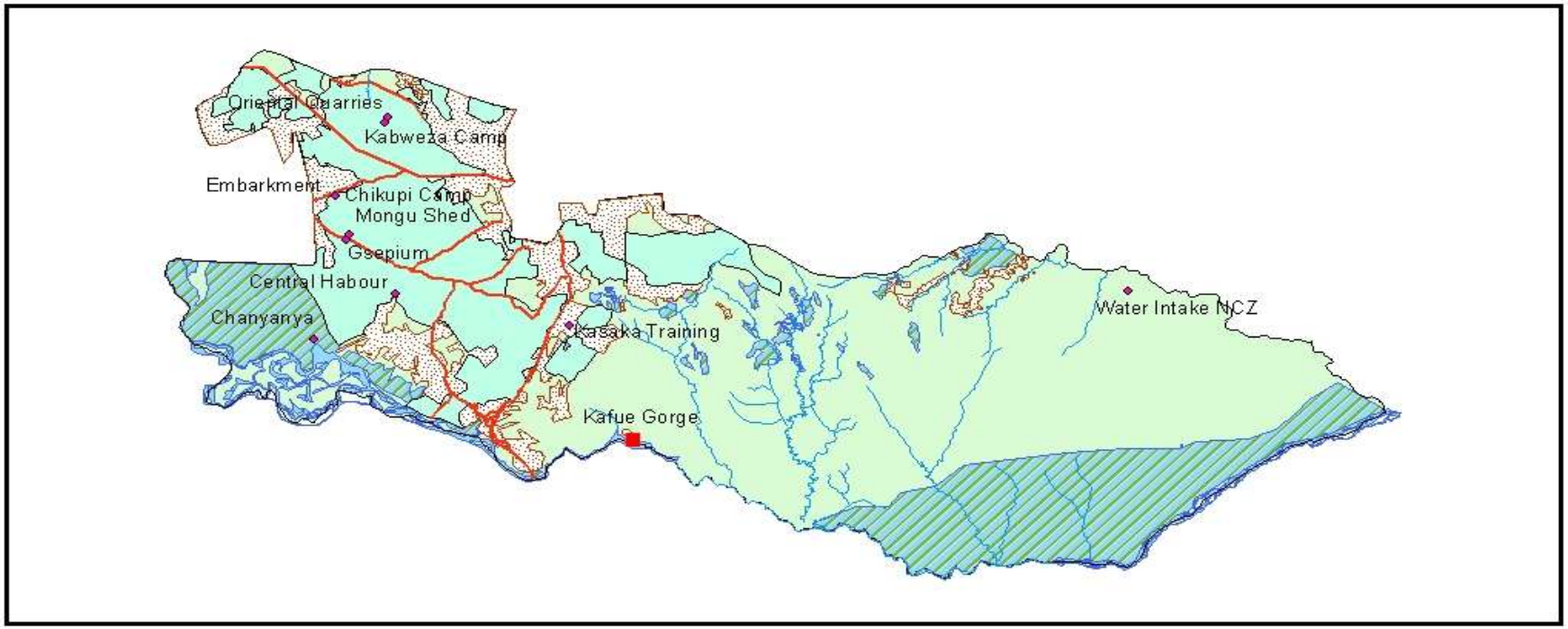
Kafue District, Zambia:

- Located between 27° 55'E and 15° 20'S and 29° 10' E and 15° 40' S
- Surface Area: 9,396 Km²
- Annual rainfall : 800 - 1000 mm
- Average elevation: 1200 meters above sea level, slopes range 2 – 10% on the upland and 0 – 1 % in the flood plan
- Soils are ferrallitic in nature, derived from various parent rocks: granite, gneiss, sandstone and schist
- Vegetation: mainly Mopane/Muunga woodland with acacia species dominating most of the upland areas
- Hydrology: Drained mainly by the Kafue river

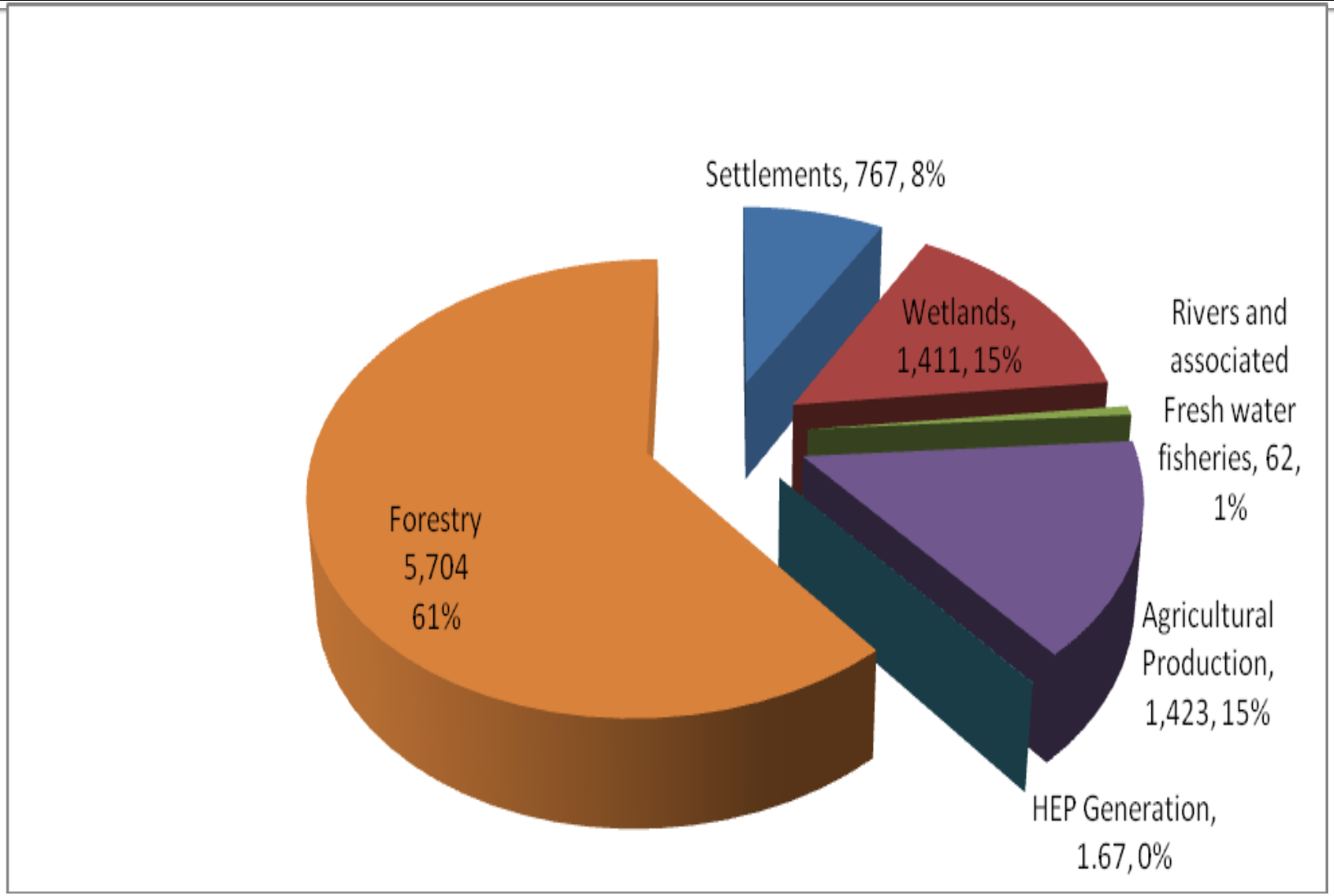




Identified land use and land cover system of study site



Proportionality of identified Land Use Systems (LUS) in study site

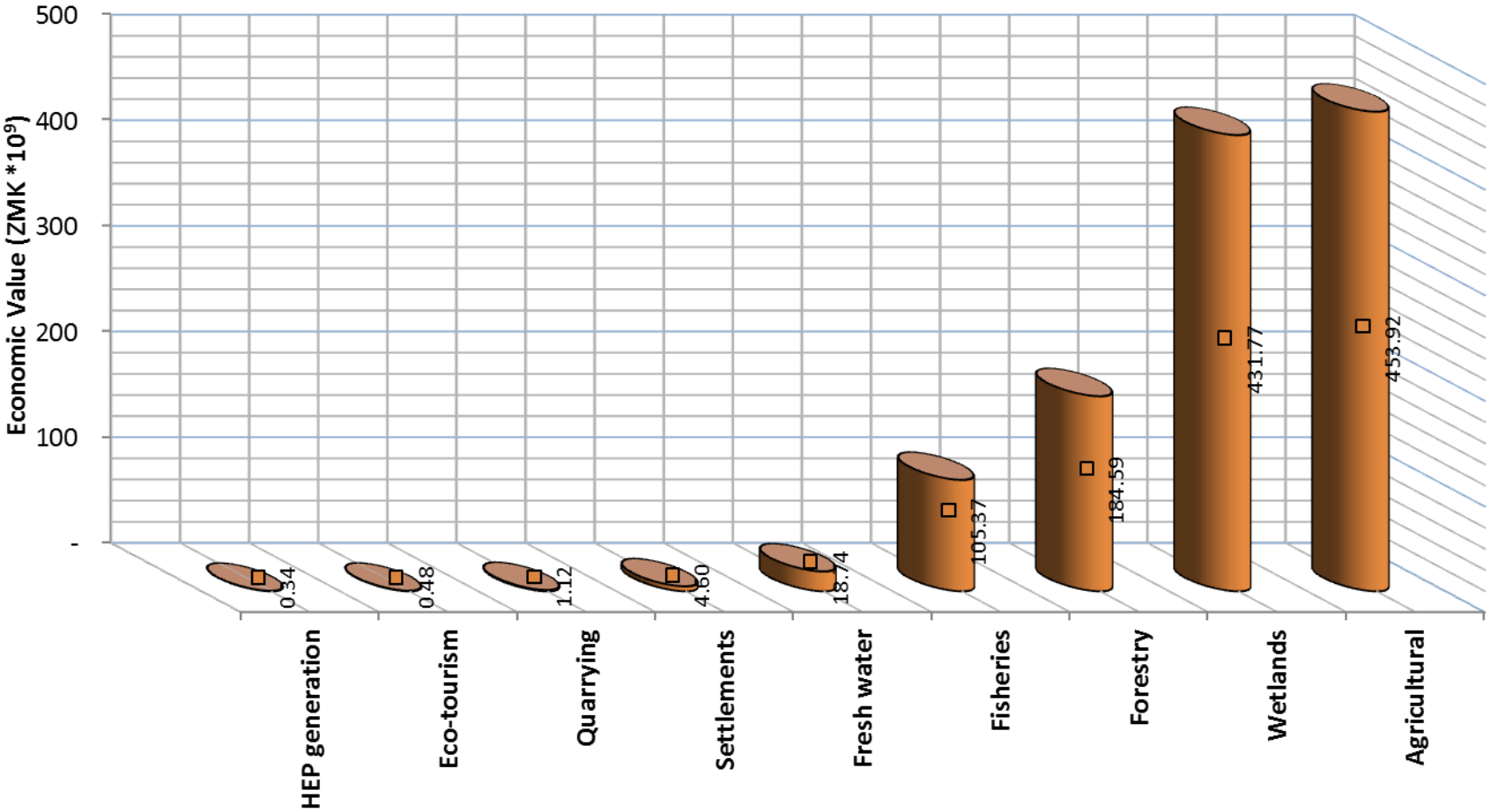


Economic Value

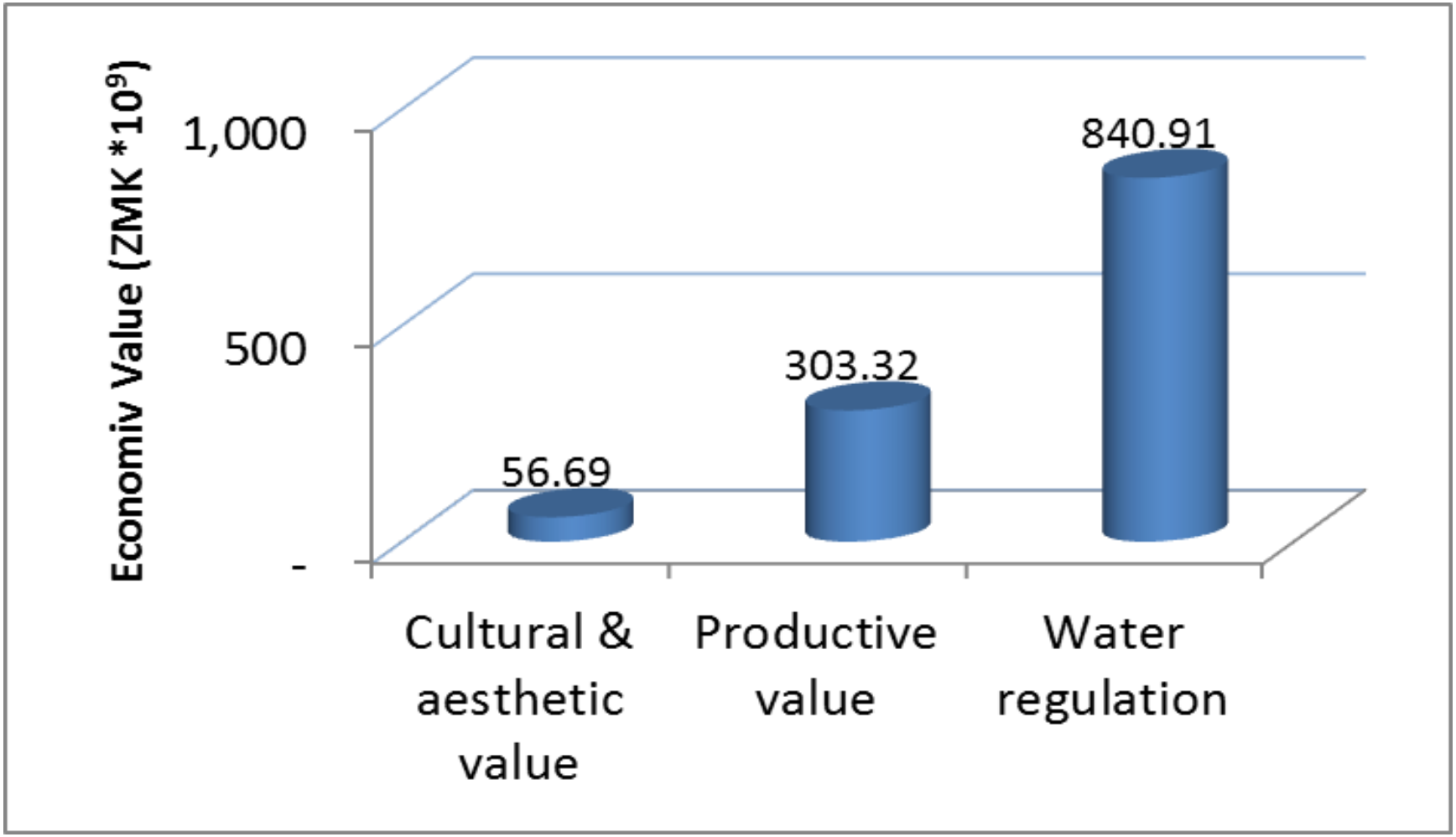
Land use system		Productive value (ZMK, '000)	Cultural & aesthetic value (ZMK, '000)	Water regulation (ZMK, '000)	Total (ZMK)	Proportion (%)
1. Agriculture	Crops	73,241,400,000	8,538,000,000	284,600,000,000		
	Livestock	87,538,400,000			453,917,800,000	37.80%
2. Forestry		36,284,860,000	34,224,000,000	114,080,000,000	184,588,860,000	15.37%
3. Fisheries		105,000,000,000	372,000,000	0	105,372,000,000	8.77%
4. Eco-tourism		0	476,100,000	0	476,100,000	0.04%
5. Fresh water		135,036,000	0	18,600,000,000	18,735,036,000	1.56%
6. HEP generation		-	10,020,000	334,000,000	344,020,000	0.03%
7. Settlements		-	4,602,000,000	0	4,602,000,000	0.38%
8. Wetlands		0	8,466,000,000	423,300,000,000	431,766,000,000	35.95%
9. Quarrying	Clay & Stones	1,118,210,000	0	0	1,118,210,000	0.09%
Total		303,317,906,000	56,690,100,000	840,914,000,000	1,200,922,006,000	100.00%
		(60,663,581,200)	(11,338,020,000)	(168,182,800,000)	(240,184,401,200)	(US$)

1 US$ = ZMK 5,000

Economic value of land use types



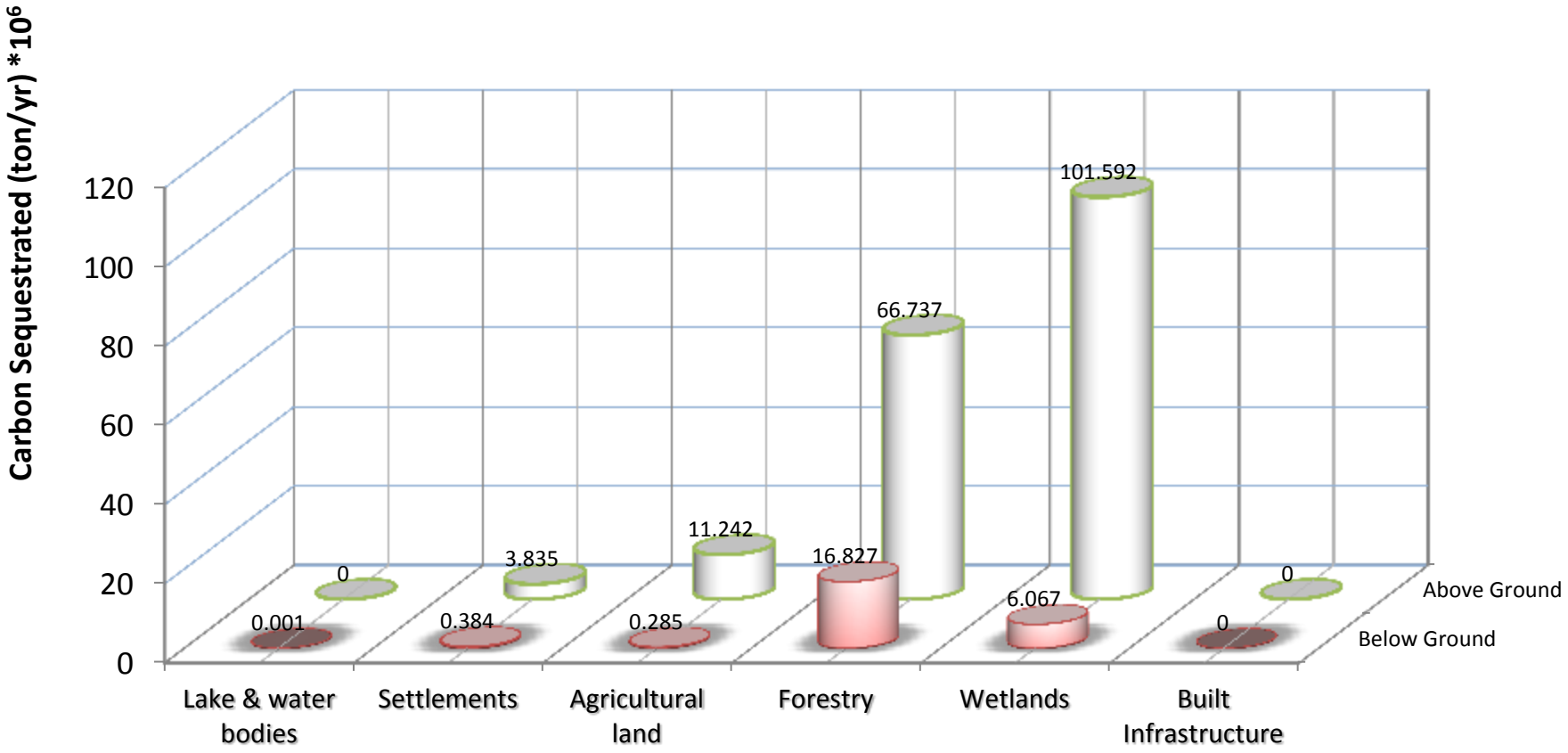
Water regulation, productive, cultural/aesthetic value



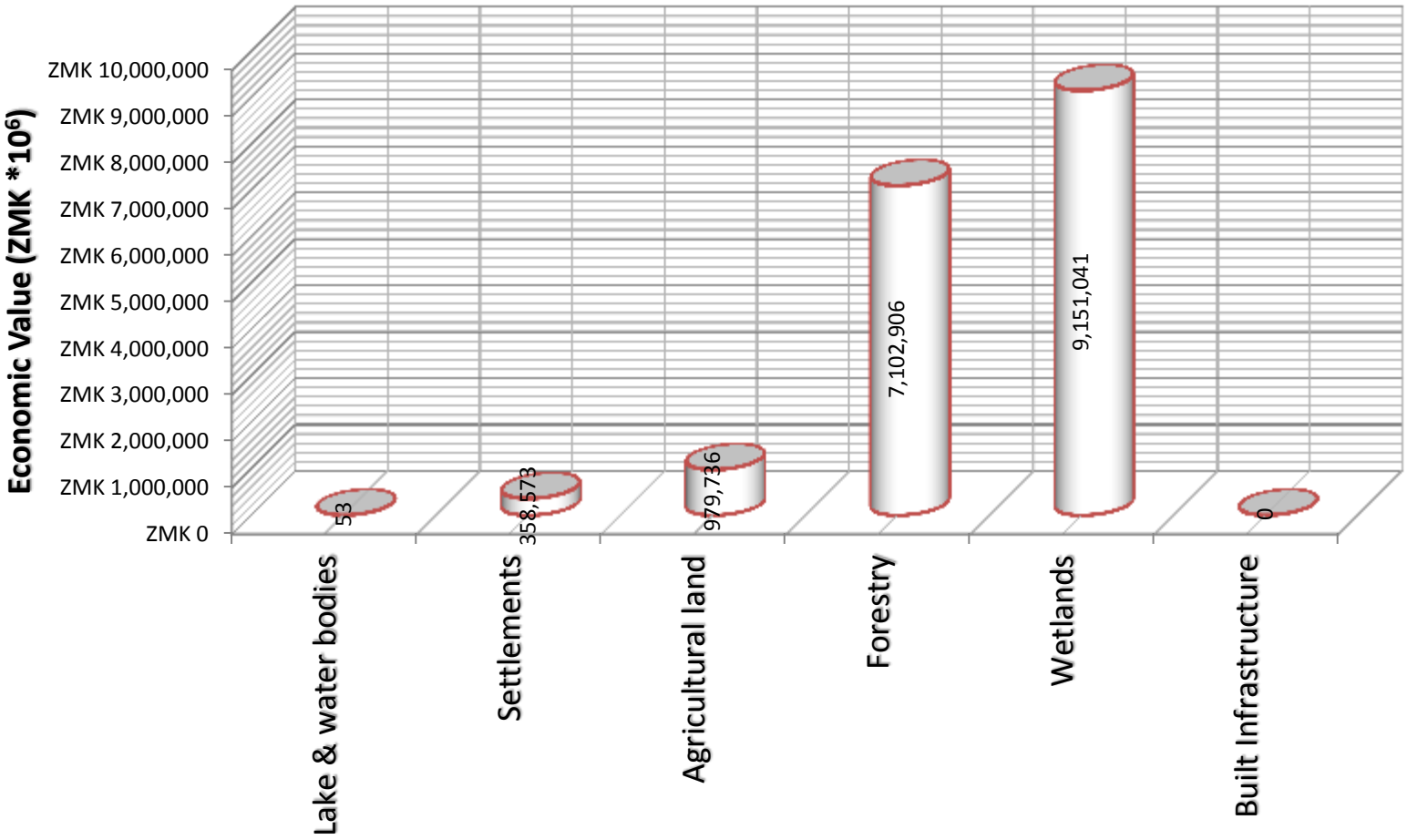
Carbon sequestration

Land use type	Area (km^2)	Share of Land area (%)	Above Ground (ton C) (x 10^6)	Below ground (ton C) (x 10^6)	Total Biomass (ton C) (x 10^6)	Economic Value (ZMK) (x 10^6)
Forestry	5,704	60.88	16.827	66.737	83.564	7,102,906
Agricultural land	1,423	15.19	0.285	11.242	11.526	979,736
Wetlands	1,411	15.06	6.067	101.592	107.659	9,151,041
Settlements	767	8.19	0.384	3.835	4.218	358,573
Lake & water bodies	62	0.66	0.001	-	0.001	53
Built Infrastructure	1.7	0.02	-	-	-	-
Total	9,369	100.00	23.563	183.406	206.968	17,592,307

Above and below ground carbon sequestration



Economic Value of Carbon Sequestration



Conclusion

- (1) The five major land-based ecosystem services identified were:
  - (i) Forestry,
  - (ii) Agriculture production,
  - (iii) Fresh water use,
  - (iv) Wetlands, and
  - (v) Hydro-power generation

  These services had significant contribution to the livelihood of both the local and outside communities of study area

- (2) The economic value of these ecosystems services was estimated at 1,200 Billion Zambian Kwacha (approx. US$ 240 Million)

- (3) Predominant contribution come from agriculture (37.80%), wetlands (35.95%), forestry (15.37%) and fisheries (8.77%)

- (4) The total stock value of the carbon sequestrated in the biomass and soils of the different land cover categories was estimated to be worth US$3.5 billion

- (4) the economic value of these land resources is threatened by rapid degradation predominantly anthropogenic in nature, and also driven by demographic pressure due to the site's proximity to Lusaka

- (5) The contribution of ecosystem goods and services identified are significant enough to justify strategic policy interventions to manage land resources in a sustainable manner, and

- (6) Failure on policy interventions can result in economic loss due to resource degradation which may be too great to ignore and lead to increased poverty among the population of study site

Recommendations

- This study demonstrated:
  - The importance of different land uses whether valued or not by stakeholders but recognized to contribute to tangible economic benefits for improved livelihood and economic growth;
  - The need for specific policy interventions/strategies to increase and sustain the benefits from improved land management systems from identified ecosystem categories
  - The need for inclusion of well-thought-out strategies with economic benefits and consider allocation of financial and human resources

Specific Recommendations-Policy interventions

- There is need to strengthen current institutional arrangements for accessing forest products on traditional land
- The private sector and NGOs should get much more involved in the protection of forests
- The government should be much more committed to funding forestry district department office in order to monitor and curb illegal forest activities
- The government should consider piloting subsidizing conservation agriculture in order to promote sustainable land use in Kafue district
- In order reduce the negative effects of land degradation from illegal quarrying, government should legalize informal quarrying responsive
- There is need to design and develop clauses in lease contracts to compel leasers to offset land degradation effects during land reclamation and restoration

Acknowledgements

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Thank You For Your Attention

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