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- ❖ Globally, ecological degradation constraints regional sustainable development, while ecological restoration can alleviate this problem.
- ❖ In the coastal landscapes of south-western Ghana, land use changes caused by socio-economic activities pose a significant threat to the ecological integrity of the landscape.
- ❖ In this study, land-use scenarios with the aim of restoring the ecological integrity of the landscape is assessed

a. Current Land cover pattern

Current

Iteration 2

Iteration 10

Iteration 5

b. ES balance

Food

Marketable products

Fuelwood

Species diversity

Regulation of soil quality

	Reference	Habitat Expansion 10	Habitat Expansion 2	Habitat Expansion 5
Food	27	15	22	19
Marketable products	50	63	55	50
Fuelwood	30	27	29	28
Species diversity	26	18	23	21
Regulation of soil quality	36	25	32	28

Sustainable landscape

Study site

The map shows the study site in the Volta region of Ghana, specifically around the towns of Nzema East, Ahanta West, and STMA. The map includes a legend for towns, study landscape, roads, water bodies, southwestern Ghana, and the study district. A scale bar indicates distances from 7.5 to 75 km.

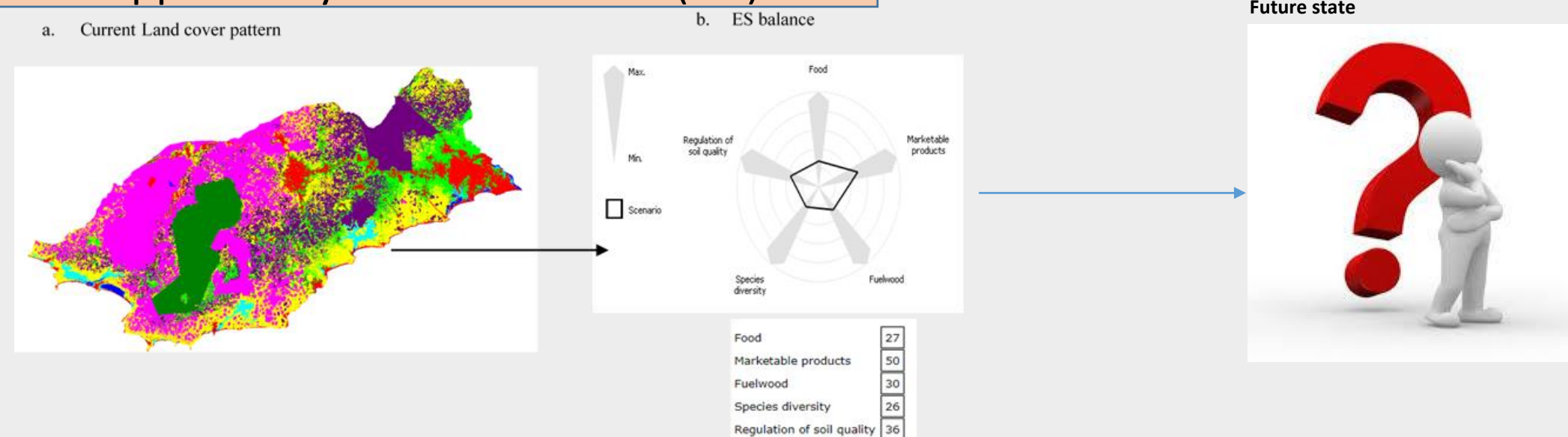
Flowchart

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graph TD
    LR[Literature review] --> L1[Land use activities with ecological restoration from tropical regions]
    L1 --> T1[Texting feasibility through stakeholder surveys]
    T1 --> L2[Locally feasible land use options  
e.g rubber agroforestry, urban greening, home gardens, agroforestry etc]
    L2 --> ES[ES assessment]
    ES --> ES_V[ES balance visualization]
    ES_V --> OCA[Opportunity cost assessment]
    CS[Current land use types] --> T1
    CS --> ES
    CS --> SA[Stakeholder surveys]
    SA --> STPRS[Spatial transition probability rule set]
    SA --> ES_V
    CA[Cellular automaton] --> STPRS
    STPRS --> LUPA[Land use pattern arrangements]
    LUPA --> ES_V
    GMP[GISCAMÉ modelling platform] --> ES_V
  
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Current	Land-use Types	Food	Marketable Products	Fuelwood	Genetic Diversity	Regulation of Soil Quality
	Settlement	0	0	0	0	0
	Forest	14	10	23	100	30
	Oil palm	9	74	20	10	18
	Rubber	0	100	25	0	12
	Wetland	5	18	100	19	6
	Cropland	100	26	50	60	100
	Shrubland	14	8	33	13	34
	Water	3	0	0	2	0
Future	Green infrastructure (eg home gardens, vertical farming)	50	30	15	16	68
	Open space restoration (domestication with wild fruit trees)	69	25	45	35	45
	Rubber agroforestry	56	90	54	35	55
	Selective cutting land preparation	45	25	30	38	60
	Cropping sequence (eg, relay intercropping)	95	70	43	79	75
	Mangrove afforestation	30	75	65	68	78
	Urban greening, (e.g intercropping fruit trees)	20	5	17	43	80
	Opportunity cost assessment (OC)	65	70	20	55	90

Opportunity cost assessment (OC)



- ❖ Participatory engagement enabled site-specific feasible development of land use scenarios
- ❖ Stakeholders perceived an ecological restoration of the landscape
 - ❖ Enhance livelihood, create resilience and achieve SGD goals
- ❖ Land use scenarios are a new paradigm for policy considerations