Appendices

Appendix 1: Survey questionnaire

UNIVERSITEIT VAN PRETORIA
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Faculty of Natural and Agricultural Sciences

STRICTLY CONFIDENTIAL

Serial Number: [_____]

Questionnaire form

LAND USE, LAND COVER CHANGE AND SOCIO-ECONOMIC ASSESSMENT OF THE CRYPTOSEPALUM FOREST
(HOUSEHOLD SURVEY)

Time Started Interview: .... **Time Ended Interview:** ....

Interviewer's Name: .... Date: ..../.............../2021/1

Instruction: Please tick which ever applies in the spaces provided on each question

SECTION A1: IDENTIFICATIONS

Q2.   Gender of Household head: *1. [   ] Female   2. [   ] Male*

Q3.   Tribe of household head: ....

Q4.   Village: ………………………………….....…....……………………………………

Q5.   Chiefdom……………………………………………….....……………………………

Q6.   District: ……………………………………….....…....……………………………………

          Location of Household: (Coordinates)

X	
Y	

SECTION A2: HOUSEHOLD MEMBERS

Q7. Provide information on the members of the household
   1) Total no. of members of household:
   2) Number of males:
   3) Number of Females:

Q. 8. Household head education level:

PRESCHOOL =	
PRIMARY =	
SECONDARY =	
HIGHER =	1
DON'T KNOW = 8	

SECTION B: HOUSEHOLD CHARACTERISTICS & ASSETS

NO.	QUESTIONS AND FILTERS	CODING CATEGORY	SKIP
Q15	What is the **main source of drinking water** for members of your household?	*Borehole..................* [1] *Dug well* • *Protected well.....................* [2] • *Unprotected well................* [3] *Rainwater......................................* [4] *Cart with small tank........................* [5] *Surface water (river/dam/lake/pond/stream* [6] *Others (Specify).......................................* [96]	
Q16	Where is that **source located**?	*In own dwelling* [1] *In own yard/plot* [2] *Elsewhere* [3]	
Q17	**How long does it take** to go there and get some water and come back	Minutes Don't Know [98]	
Q18	What **type of fuel** does your household mainly use for **cooking** *What do you use for cooking*	*Electricity* [1] *Kerosene* [2] *Charcoal* [3] *Wood* [4] *Straw/shrubs/grass* [5] *Agricultural crop residue* [6] *Animal dung* [7] *Others (Specify) ………………* [96]	
Q19	Is the **cooking** usually done in the **home**, in a **separate building**, or **outdoor**?	*In the house* [1] *In a separate building* [2] *Outdoor* [3] *Others (Specify)* [96]	
Q20	Do you have a **separate room** which is used as a kitchen?	Yes [1] No [2]	
Q21	How **many rooms** in this household are used for sleeping	Rooms	
Q22	OBSERVE THE MAIN **MATERIAL** OF THE **FLOOR** OF THE DWELLING RECORD OBSERVATIONS	**NATURAL FLOOR** *Earth/sand* [1] *Dung* [2] **FINISHED FLOOR** *Cement* [3]	

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Q23	OBSERVE THE MAIN **MATERIAL** OF THE **ROOF** OF THE DWELLING
	
	RECORD OBSERVATIONS
		NATURAL ROOFING
		   Thatch *[1]*
		
		FINISHED ROOFING
		   Asbestos *[2]*
		   Iron sheets *[3]*
		   Ceramic tiles *[4]*
		
		OTHERS (Specify)......................... *[96]*	

Q24	OBSERVE THE MAIN **MATERIAL** OF THE **EXTERIOR WALLS** OF THE DWELLING
	
	RECORD OBSERVATIONS
		NATURAL WALLS
		   Muddy walls *[1]*
		   Poles *[2]*
		   Poles with mud *[3]*
		   Thatch *[4]*
		
		FINISHED WALLS
		   Cement *[5]*
		   Bricks *[6]*
		   Cement blocks *[7]*
		
		Others (Specify)............................ *[96]*	

Q25	Does any member of this **household own any items** listed in the column on the right?	*Yes* *No* • *A bicycle?* *[1]* *[2]* • *A motor cycle or motor scooter?* *[1]* *[2]* • *An animal drawn cart?* *[1]* *[2]* • *A car or truck?* *[1]* *[2]* • *Mobile phone* *[1]* *[2]* • *Television* *[1]* *[2]* • *Radio* *[1]* *[2]* • *Satellite dish* *[1]* *[2]* • *Solar panel(s)* *[1]* *[2]*	
Q26	Does this household own **any livestock, herds, or other farm animals or poultry**?	Yes No [1] [2]	
Q27	**How many** of the following animals do this household own? **IF NONE, RECORD '00'** **IF 95 OR MORE, RECORD '95'** **IF UNKNOWN, RECORD '98'**	Chicken ☐ Goats ☐ Pigs ☐ Sheep ☐ Milk cows ☐ Cattle ☐ Ducks ☐	

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Q28	In the last five years, **have you sold any** of these to cover household needs?		YES	NO	
		Chicken	1	2	
		Goats	1	2	
		Pigs	1	2	
		Sheep	1	2	
		Milk Cows	1	2	
		Cattle	1	2	
		Donkeys	1	2	
Q29	Does any member of the **household practice** any of the following as **income generating activities?**	Family business [1] In full-time employment [2] Timber selling [3] Charcoal selling [4] Brick moulding and selling [5] Piece work (Part-time work) [6] OTHERS (Specify....................................) [96]			

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SECTION B: LAND OWNERSHIP

NO.	QUESTIONS	CODING CATEGORIES	SKIP
Q30	Does any member of this household o**wn any farmland**?	Yes No [1] [2]	
Q31	**How many pieces** of farmland do members of this household own?	☐☐	
Q32	**How many limas or hectares** of farmland do members of this household own? IF 95 OR MORE, CIRCLE '950'	Hectares: Limas: ☐☐ 95 OR MORE HECTARES 950 DONT KNOW 998	
Q33	Does the **household farm on this land alone** or you have **land elsewhere**?	Yes No [1] [2]	
Q34	**How long** has the household **used the farm**?	.... Years	

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Q35	What is the household **status of living** on this farm?	Local/indigenous people	[1]	
		Migrants	[2]	
Q36	How does the household claim accession for land ownership? **What documentation do you have for ownership of the land**	Title deed Chiefdom letter of offer Village register Land claim by clearing OTHERS (Specify ....)	[1] [2] [3] [4] [96]	
Q37	Does your household have **land security problems?**	Yes No Don't know [1] [2] [3]		
Q38	If response to Q37 is yes, what could be the **main causes of land insecurity** to your household?	Insecure land tenure Corruption among local leaders Poor customary land administration Lack of adequate land - population growth OTHERS (Specify................................... [96]	[1] [2] [3] [4]	

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17 ### SECTION C: FARMING PRACTICES
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Q39	What type of agricultural practices does the household undertake on your farm? **How do you grow your crops**	Do you cut down trees then plant crops (shifting cultivat Conservation farming Is it one crop only (mono-cropping) Is it mixed crops (mixed/intercropping) Do you grow crops with trees together (mixed cropping Others (Specify.................	[1] [2] [3] [4] [5] [6)	
Q40	For **how long** has your household been **engaged** in the **above farming practice**?	Years:		
Q41	For each crop type in the table below, provide information on production trends over the last five years and the amounts harvested, consumed and sold by the household.			

Crop *Do you grow any:* *(Tick)*	Production trends over past 5 years		How many 50kg bags harvested, consumed and sold last farming season		
			Harvested (Kg)	Consumed (Kg)	Sold (Kg)
Maize	Low (few) 1	High (a lot) 2			
Cassava	1	2			
Sorghum	1	2			
Sweet Potatoes	1	2			
Groundnuts	1	2			
Others (Specify)	1	2			

Q42	**If** household **production** trends have been **low** over the past five years, what could be the **reason**	Poor fertility of soils *[1]* Low rainfall *[2]* Did not use the whole land *[3]* Did not have enough labour *[4]* Did not have farming inputs *[5]* OTHERS (Specify .... *[96]*
Q43	Did your household **clear up forest land for crop fields** within the last 10 years?	Yes No Don't know [1] [2] [3]
Q44	What was the **main reason** for clearing forest land	Increase agricultural production *[1]* Previous field lost fertility *[2]* Recently allocated farmland *[3]* Previously had no field to cultivate *[4]* *Previous farmland was taken away* *[5]* *OTHERS (Specify)* …………………… *[96]*

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Q45	If response is yes to Q43 above, **how much forest land did you clear**?	Hectares: Limas:
Q46	**When clearing** land area for agriculture, does your household **leave any local trees** in the standing fields?	*Yes No Don't know* *[1] [2] [3]*

Q47	If your household leaves local trees standing in fields, kindly **list the trees** and give main reasons for leaving them in fields.					
	Local tree species	Main reasons for sparing the local trees in fields				
		Fruits *1*	*Firewood* *2*	*Soil fertility* *3*	*Shelter* *4*	*Others (Specify* *5*
		1	*2*	*3*	*4*	*5*
		1	*2*	*3*	*4*	*5*
		1	*2*	*3*	*4*	*5*
		1	*2*	*3*	*4*	*5*
		1	*2*	*3*	*4*	*5*
		1	*2*	*3*	*4*	*5*
		1	*2*	*3*	*4*	*5*

Q48	Do you as a household know of any **local trees** that are traditionally **used for soil fertility?**	*Yes* *No* *Don't know* *[1]* *[2]* *[3]* *Tree Name: Do you grow/plant it?* *1.* *2.* *3.* *4.* *5.* *6.*
Q49	List the names of other common local trees you know	

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21 **SECTION D:** **FOREST RESOURCE USE AND MANAGEMENT**

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No.	QUESTIONS	CODING CATEGORIES	SKIP
Q50	Are you aware of **benefits** that are obtained **from the forest**	*Yes* *No* *Don't know [* *1]* *[2]* *[3]*	

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Q51	From the list on the table below, **tick the products you obtain from your farm or nearby forest.**	How often do you get product: 1 = not often, 2 = often How abundant is the product: 1= not abundant, 2 = abundant		

Product	Frequency of use		Level of abundance	
Timber	1	2	1	2
Charcoal	1	2	1	2
Construction poles	1	2	1	2
Fire wood	1	2	1	2
Wild fires	1	2	1	2
Medicine	1	2	1	2
Tubers	1	2	1	2
Wood fibre	1	2	1	2
Caterpillars	1	2	1	2
Honey	1	2	1	2
Wild vegetables	1	2	1	2
Thatching grass	1	2	1	2
Livestock fodder	1	2	1	2
Bush meat	1	2	1	2
Mushroom	1	2	1	2
OTHERS (Specify …………………………)	1	2	1	2

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Q52	**Who collects the products (circle)** 1= Men; 2 = Women, 3 = Children;						

Product	Main collector of products				
Timber	1	2	3	4	5
Charcoal	1	2	3	4	5
Construction poles	1	2	3	4	5
Fire wood	1	2	3	4	5
Wild fires	1	2	3	4	5

4 = Women and Children; 5 = Men and Children 6 = All **If 6, write at the end**	Medicine	1	2	3	4	5
	Tubers	1	2	3	4	5
	Wood fibre	1	2	3	4	5
	Caterpillars	1	2	3	4	5
	Honey	1	2	3	4	5
	Wild vegetables	1	2	3	4	5
	Thatching grass	1	2	3	4	5
	Livestock fodder	1	2	3	4	5
	Bush meat	1	2	3	4	5
	OTHERS (Specify ………………………….)	1	2	3	4	5

Q53	Are there **any other** services/**benefits** that **forests provide**	Yes No Don't know [1] [2] [3]
Q54	If response to Q53 is yes, Do you agree that:	Where: 1 = Agree; 2 = Disagree; 3 = Don't Know 1. Forests assist in rainfall 1 2 3 2. Prevents loss of soil 1 2 3 3. Help to make a place look beautiful 1 2 3 4. Protects water in rivers and streams 1 2 3 5. OTHERS (Specify….............)
Q55	Do you know of any ways that help protect local trees on your farm and surrounding forest area?	Yes No Don't know [1] [2] [3]
Q56	If response is yes to Q55 above, list the ways:	....
Q57	As a household, how would you **rate the extent of forest**	Decreasing [1] The same [2] Increasing [3]

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	cover in your area over the past 10 years?	*I don't know*	*[4]*	
Q58	If forest cover is decreasing, **what are the reasons?** *Circle all that apply*	*Charcoal production* *Agricultural activities* *Settlements* *Population increase* *Others (please Specify ....*	*[1]* *[2]* *[3]* *[4]* *[96]*	

Q59. What are the main livelihood challenges that your local community is facing:

Thank you for your time

84   *Appendix 2: FGD form*

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STRICTLY CONFIDENTIAL   *Serial Number:* [_____]

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87   **LAND USE, LAND COVER CHANGE AND SOCIO-ECONOMIC ASSESSMENT OF THE**
88   **CRYPTOSEPALUM FOREST**

89   **Social assessment**

Questions	Answers
1. Number of households in the area	
2. Number of people (population)	
3. What are the five main activities that local people are involved in to make money (income generating activities)	
4. How many primary and secondary schools in the area	
5. How many health posts are available in the area	
6. What are the five main challenges that local people face in the area	

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91   **Mavunda and local community use**

Questions	Answers
7. Do we all know what the Mavunda is?	
8. Is there a reason why it is called Mavunda? If yes, give reason	
9. Why is the Mavunda important to you local people in this area?	
10. What is Mavunda used for by the local people?	
11. Around what year was the Mavunda intact? When did it start decreasing in terms of tree communities?	
12. What are the five main causes of decrease in forest/tree cover?	
13. When did timber harvesting commence in the area?	
14. Are local people involved in timber harvesting activities? If so what type of involvement?	
15. Do you think the involvement is sufficient? If not why	
16. How else can local people be involved in order for them to benefit?	
17. What do you think can be done to reduce forest loss in the area?	

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93   **Socio-economic status and wealth ranking by communities in the study area**

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95   Do we have very rich, rich, poor and very poor households in this village?

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Wealth Indicator	Wealth category			
	Very rich	Rich household	Poor household	Very poor household
Land ownership (own land? How many)				
Quality of house (own a house? What type of roof, walls, floor)				
Water sources (where does he obtain water)				
Cultivation (how big is the area of cultivation)				
Means of cultivation (oxen, manual labour, etc)				
Productivity (Quantity of bags produced, e.g. maize, cassava)				
Livestock (type of livestock, how many)				
Source of livelihood (employment, business, agriculture production, piece work)				
Source of income (what sources of income)				
Assets (what type of assets)				
Family Education (college, secondary, primary, none)				

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98 *Appendix 3: Omnibus Test of Model Coeficients for the influence of social and economic*
99 *elements on forest produuct use*

Forest product	Chi-square	df	Sig.	Cox & Snell R Square	Nagelkerke R Square
Timber	17.642	5	0.003	0.174	0.445
Charcoal	3.369	5	0.643	0.059	0.136
Construction poles	43.900	5	0.000	0.217	0.364
Firewood	5.059	5	0.409	0.156	0.181
Medicine	9.635	5	0.086	0.091	0.146
Wild vegetables	9.754	5	0.083	0.139	0.303
Tubers	39.374	5	0.000	0.214	0.300
Fibre	20.386	5	0.001	0.115	0.213
Caterpillars	12.364	5	0.030	0.134	0.204
Honey	22.694	5	0.000	0.112	0.155
Mushrooms	12.820	5	0.025	0.102	0.178
Fruits	26.831	5	0.000	0.152	0.204
Thatching grass	64.237	5	0.000	0.341	0.455
Wild animals	9.028	5	0.108	0.071	0.254

100 *Appendix 4: The influence of socio-economic elements on forest product use*

Dependent variable	Independent variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B) Lower	Upper
Timber use	Gender	18.570	5661.365	0.000	1	0.997	11.610-8	0.000	
	Level of education								
	None			12.755	2	0.002			
	Primary	-1.198	0.911	1.731	1	0.188	0.302	0.051	1.798
	Secondary	2.410	1.186	4.128	1	0.042	11.139	1.089	113.944
	Household size								
	< 5			1.277	4	0.865			
	5 - 10	0.065	0.857	0.006	1	0.940	1.067	0.199	5.723
	11 - 15	-19.846	5755.840	0.000	1	0.997	0.000	0.000	
	16 - 20	-19.116	8169.389	0.000	1	0.998	0.000	0.000	
	> 20	1.249	1.227	1.036	1	0.309	3.486	0.315	38.632
	Household wealth status								
	Very poor			1.964	2	0.375			
	Poor	1.601	1.171	1.871	1	0.171	4.959	0.500	49.195
	Well-off	1.744	1.407	1.536	1	0.215	5.721	0.363	90.226
	Residence Status	1.790	0.854	4.396	1	0.036	5.992	1.124	31.945
Charcoal use	**Gender**	0.919	1.148	0.641	1	0.423	2.506	0.264	23.762
	Level of education								
	None			2.835	2	0.242			
	Primary	1.166	0.721	2.617	1	0.106	3.211	0.781	13.192
	Secondary	0.409	1.347	0.092	1	0.761	1.505	0.108	21.078
	Household size								
	< 5			3.867	4	0.424			
	5 - 10	-0.493	0.791	0.389	1	0.533	0.611	0.130	2.877
	11 - 15	0.828	0.804	1.061	1	0.303	2.289	0.474	11.061
	16 - 20	0.337	1.047	0.104	1	0.747	1.401	0.180	10.913
	> 20	-19.617	10668.134	0.000	1	0.999	0.000	0.000	

		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
	Household wealth status								
	Very poor			0.761	2	0.683			
	Poor	-0.197	0.767	0.066	1	0.797	0.821	0.183	3.694
	Well-off	0.446	0.919	0.236	1	0.627	1.562	0.258	9.459
	Residence Status	-0.389	0.705	0.305	1	0.581	0.678	0.170	2.696
Construction poles	**Gender**	1.948	0.632	9.494	1	0.002	7.017	2.032	24.233
	Level of education								
	None			7.874	2	0.020			
	Primary	-1.688	0.620	7.428	1	0.006	0.185	0.055	0.622
	Secondary	-0.271	1.275	0.045	1	0.831	0.762	0.063	9.269
	Household size								
	< 5			17.388	4	0.002			
	5 - 10	-0.867	0.727	1.421	1	0.233	0.420	0.101	1.748
	11 - 15	-1.882	0.894	4.428	1	0.035	0.152	0.026	0.879
	16 - 20	-2.613	0.964	7.340	1	0.007	0.073	0.011	0.486
	> 20	-4.119	1.086	14.371	1	0.000	0.016	0.002	0.137
	Household wealth status								
	Very poor			10.646	2	0.005			
	Poor	1.762	0.611	8.311	1	0.004	5.827	1.758	19.313
	Well-off	2.558	0.901	8.057	1	0.005	12.909	2.207	75.499
	Residence Status	-1.086	0.542	4.019	1	0.045	0.337	0.117	0.976
Firewood use	**Gender**	-16.298	5013.107	0.000	1	0.997	0.000	0.000	
	Level of education								
	None			0.000	2	1.000			
	Primary	-17.364	3914.127	0.000	1	0.996	0.000	0.000	
	Secondary	0.957	10510.983	0.000	1	1.000	2.604	0.000	
	Household size								
	< 5			0.955	4	0.917			
	5 - 10	0.716	1.343	0.284	1	0.594	2.046	0.147	28.466
	11 - 15	0.397	1.489	0.071	1	0.790	1.487	0.080	27.510
	16 - 20	-0.508	1.575	0.104	1	0.747	0.602	0.027	13.182
	> 20	18.840	10462.941	0.000	1	0.999	15.212-7	0.000	
	Household wealth status								
	Very poor			0.009	2	0.996			
	Poor	-16.527	4214.703	0.000	1	0.997	0.000	0.000	
	Well-off	-16.410	4214.703	0.000	1	0.997	0.000	0.000	
	Residence Status	17.553	5712.789	0.000	1	0.998	41.991-7	0.000	
Medicine use	**Gender**	0.246	0.510	0.232	1	0.630	1.279	0.470	3.475
	Level of education								
	None			1.459	2	0.482			
	Primary	-0.459	0.447	1.054	1	0.305	0.632	0.263	1.518
	Secondary	0.243	0.940	0.067	1	0.796	1.275	0.202	8.055
	Household size								
	< 5			2.791	4	0.593			
	5 - 10	0.738	0.473	2.436	1	0.119	2.091	0.828	5.282
	11 - 15	0.466	0.642	0.527	1	0.468	1.593	0.453	5.603
	16 - 20	0.073	0.698	0.011	1	0.916	1.076	0.274	4.224
	> 20	20.672	10641.306	0.000	1	0.998	95.003-7	0.000	
	Household wealth status								
	Very poor			4.236	2	0.120			
	Poor	0.894	0.481	3.456	1	0.063	2.445	0.953	6.273
	Well-off	0.131	0.652	0.040	1	0.841	1.140	0.318	4.091
	Residence Status	1.328	0.661	4.033	1	0.045	3.774	1.032	13.798
Wild vegetables	**Gender**	0.328	0.915	0.128	1	0.720	1.388	0.231	8.344
	Level of education								
	None			2.065	2	0.356			
	Primary	-0.872	0.610	2.041	1	0.153	0.418	0.127	1.383
	Secondary	-0.796	1.265	0.396	1	0.529	0.451	0.038	5.385

		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
	Household size								
	< 5			0.596	4	0.963			
	5 - 10	18.983	5330.563	0.000	1	0.997	17.548-8	0.000	
	11 - 15	18.619	5330.564	0.000	1	0.997	12.198-8	0.000	
	16 - 20	19.324	5330.564	0.000	1	0.997	24.667-8	0.000	
	> 20	-0.136	11.984	0.000	1	1.000	0.873	0.000	
	Household wealth status								
	Very poor			0.150	2	0.928			
	Poor	19.503	4794.713	0.000	1	0.997	29.527-8	0.000	
	Well-off	19.245	4794.713	0.000	1	0.997	22.811-8	0.000	
	Residence Status	1.011	0.626	2.611	1	0.106	2.748	0.806	9.365
Tubers	**Gender**	-0.738	0.529	1.945	1	0.163	0.478	0.169	1.349
	Level of education								
	None			6.384	2	0.041			
	Primary	-0.951	0.412	5.327	1	0.021	0.386	0.172	0.866
	Secondary	-1.535	0.851	3.256	1	0.071	0.215	0.041	1.141
	Household size								
	< 5			6.672	4	0.154			
	5 - 10	-0.392	0.422	0.863	1	0.353	0.676	0.296	1.545
	11 - 15	-1.040	0.564	3.397	1	0.065	0.353	0.117	1.068
	16 - 20	-22.117	9223.309	0.000	1	0.998	0.000	0.000	
	> 20	-1.955	0.920	4.518	1	0.034	0.142	0.023	0.859
	Household wealth status								
	Very poor			6.671	2	0.036			
	Poor	1.130	0.484	5.459	1	0.019	3.095	1.200	7.985
	Well-off	1.571	0.677	5.382	1	0.020	4.810	1.276	18.131
	Residence Status	-2.027	0.649	9.749	1	0.002	0.132	0.037	0.470
Fibre	**Gender**	1.941	0.589	10.858	1	0.001	6.967	2.196	22.105
	Level of education								
	None			3.797	2	0.150			
	Primary	-0.832	0.569	2.138	1	0.144	0.435	0.143	1.328
	Secondary	-1.640	0.928	3.123	1	0.077	0.194	0.031	1.196
	Household size								
	< 5			4.867	4	0.301			
	5 - 10	0.174	0.628	0.077	1	0.782	1.190	0.347	4.078
	11 - 15	-1.284	0.774	2.753	1	0.097	0.277	0.061	1.262
	16 - 20	-0.373	0.910	0.168	1	0.682	0.689	0.116	4.100
	> 20	0.013	1.292	0.000	1	0.992	1.013	0.081	12.738
	Household wealth status								
	Very poor			3.531	2	0.171			
	Poor	1.159	0.617	3.530	1	0.060	3.186	0.951	10.671
	Well-off	0.876	0.875	1.001	1	0.317	2.400	0.432	13.338
	Residence Status	-0.044	0.590	0.006	1	0.940	0.957	0.301	3.041
Caterpillars	**Gender**	-0.525	0.598	0.771	1	0.380	0.591	0.183	1.910
	Level of education								
	None			5.248	2	0.020			
	Primary	-0.394	0.454	0.755	1	0.385	0.674	0.277	1.641
	Secondary	-1.696	0.740	5.261	1	0.072	0.183	0.043	0.783
	Household size								
	< 5			18.112	4	0.001			
	5 - 10	0.747	0.510	2.141	1	0.143	2.110	0.776	5.735
	11 - 15	-0.451	0.566	0.633	1	0.426	0.637	0.210	1.933
	16 - 20	-2.231	0.740	9.092	1	0.003	0.107	0.025	0.458
	> 20	-0.318	0.814	0.152	1	0.696	0.728	0.148	3.587
	Household wealth status								
	Very poor			0.449	2	0.799			
	Poor	0.095	0.513	0.034	1	0.853	1.100	0.403	3.004
	Well-off	0.433	0.699	0.385	1	0.535	1.542	0.392	6.065

		B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
	Residence Status	-0.283	0.484	0.343	1	0.558	0.753	0.292	1.945
Honey	**Gender**	1.288	0.561	5.280	1	0.022	3.626	1.209	10.878
	Level of education								
	None			9.566	2	0.008			
	Primary	-1.077	0.389	7.662	1	0.006	0.341	0.159	0.730
	Secondary	-1.874	0.800	5.496	1	0.019	0.153	0.032	0.735
	Household size								
	< 5			1.526	4	0.822			
	5 - 10	-0.311	0.425	0.533	1	0.465	0.733	0.319	1.687
	11 - 15	-0.495	0.531	0.870	1	0.351	0.610	0.215	1.725
	16 - 20	-0.714	0.719	0.986	1	0.321	0.490	0.120	2.004
	> 20	-0.155	0.718	0.047	1	0.829	0.856	0.210	3.497
	Household wealth status								
	Very poor			6.423	2	0.040			
	Poor	1.024	0.448	5.220	1	0.022	2.783	1.157	6.696
	Well-off	1.360	0.588	5.349	1	0.021	3.897	1.231	12.342
	Residence Status	-0.607	0.467	1.689	1	0.194	0.545	0.218	1.361
Mushroom	**Gender**	-0.157	0.646	0.059	1	0.808	0.855	0.241	3.032
	Level of education								
	None			10.028	2	0.007			
	Primary	-1.979	0.631	9.823	1	0.002	0.138	0.040	0.477
	Secondary	-2.000	0.947	4.462	1	0.035	0.135	0.021	0.866
	Household size								
	< 5			4.545	4	0.337			
	5 - 10	0.820	0.577	2.018	1	0.155	2.271	0.732	7.038
	11 - 15	-0.145	0.715	0.041	1	0.839	0.865	0.213	3.516
	16 - 20	-0.176	0.859	0.042	1	0.838	0.838	0.156	4.517
	> 20	-0.406	0.871	0.218	1	0.641	0.666	0.121	3.671
	Household wealth status								
	Very poor			10.408	2	0.005			
	Poor	1.893	0.590	10.296	1	0.001	6.640	2.089	21.105
	Well-off	1.561	0.754	4.288	1	0.038	4.763	1.087	20.863
	Residence Status	0.287	0.573	0.251	1	0.616	1.333	0.433	4.100
Fruits	**Gender**	1.017	0.476	4.561	1	0.033	2.765	1.087	7.033
	Level of education								
	None			1.463	2	0.481			
	Primary	-0.073	0.361	0.041	1	0.840	0.930	0.458	1.886
	Secondary	-0.854	0.721	1.401	1	0.237	0.426	0.104	1.751
	Household size								
	< 5			14.785	4	0.005			
	5 - 10	0.258	0.401	0.414	1	0.520	1.294	0.590	2.839
	11 - 15	0.714	0.510	1.958	1	0.162	2.042	0.751	5.550
	16 - 20	2.384	0.783	9.267	1	0.002	10.848	2.337	50.344
	> 20	2.416	0.918	6.930	1	0.008	11.198	1.854	67.653
	Household wealth status								
	Very poor			3.368	2	0.186			
	Poor	0.519	0.396	1.717	1	0.190	1.680	0.773	3.652
	Well-off	-0.205	0.560	0.135	1	0.714	0.814	0.272	2.439
	Residence Status	0.901	0.424	4.522	1	0.335	2.461	1.073	5.645
Thatching grass	**Gender**	-0.542	0.573	0.892	1	0.345	0.582	0.189	1.790
	Level of education								
	None			17.200	2	0.000			
	Primary	-1.833	0.447	16.809	1	0.000	0.160	0.067	0.384
	Secondary	-0.916	0.854	1.152	1	0.283	0.400	0.075	2.132
	Household size								
	< 5			29.276	4	0.000			
	5 - 10	0.339	0.468	0.523	1	0.470	1.403	0.560	3.514
	11 - 15	-1.394	0.590	5.582	1	0.018	0.248	0.078	0.788

	16 - 20	-4.671	1.244	14.087	1	0.000	0.009	0.001	0.107
	> 20	-2.278	0.922	6.106	1	0.013	0.102	0.017	0.624
	Household wealth status								
	Very poor			7.519	2	0.023			
	Poor	1.398	0.510	7.518	1	0.006	4.046	1.490	10.986
	Well-off	1.132	0.655	2.990	1	0.084	3.103	0.860	11.200
	Residence Status	-1.921	0.488	15.486	1	0.000	0.146	0.056	0.381
Wild animals	**Gender**	1.592	1.619	0.967	1	0.325	4.915	0.206	117.453
	Level of education								
	None			1.855	2	0.395			
	Primary	-1.281	0.941	1.855	1	0.173	0.278	0.044	1.755
	Secondary	-19.659	9512.352	0.000	1	0.998	0.000	0.000	
	Household size								
	< 5			1.565	4	0.815			
	5 - 10	0.433	1.283	0.114	1	0.736	1.542	0.125	19.043
	11 - 15	0.474	1.284	0.136	1	0.712	1.607	0.130	19.881
	16 - 20	1.786	1.602	1.244	1	0.265	5.967	0.258	137.781
	> 20	-17.957	10419.106	0.000	1	0.999	0.000	0.000	
	Household wealth status								
	Very poor			0.543	2	0.762			
	Poor	18.196	4810.528	0.000	1	0.997	79.901-7	0.000	
	Well-off	18.929	4810.528	0.000	1	0.997	16.623-7	0.000	
	Residence Status	-17.937	5770.206	0.000	1	0.998	0.000	0.000	

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102   Appendix 5: The influence of social and economic elements on land use and land cover change

103   activities

Dependent variable	Independent variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Agriculture	**Gender**	1.014	0.512	3.929	1	0.047	2.757	1.011	7.518
	Education								
	None			3.426	2	0.180			
	Primary	-0.733	0.398	3.390	1	0.066	0.480	0.220	1.048
	Secondary	-0.418	0.781	0.287	1	0.592	0.658	0.142	3.042
	HH size			11.283	4	0.024			
	< 5	-1.133	0.896	1.597	1	0.206	0.322	0.056	1.866
	5 - 10	0.502	0.425	1.395	1	0.238	1.652	0.718	3.797
	11 - 15	-1.000	0.591	2.865	1	0.090	0.368	0.116	1.171
	16 - 20	-0.513	0.706	0.527	1	0.468	0.599	0.150	2.391
	> 20	-0.388	0.163	5.670	1	0.017	0.678	0.493	0.934
	Household wealth status								
	Very poor			3.702	2	0.157			
	Poor	0.670	0.438	2.341	1	0.126	1.954	0.828	4.608
	Well-off	-0.045	0.633	0.005	1	0.943	0.956	0.277	3.304
	Residence Status	-2.552	0.766	11.093	1	0.001	0.078	0.017	0.350
Settlement	**Gender**	17.912	5532.491	0.000	1	0.997	60.129-7	0.000	
	Education								
	None			0.000	2	1.000			
	Primary	-16.762	3937.235	0.000	1	0.997	0.000	0.000	
	Secondary	2.028	4278.516	0.000	1	1.000	7.602	0.000	
	Household size								
	< 5			0.210	4	0.995			
	5 - 10	-0.558	1.216	0.210	1	0.646	0.573	0.053	6.203

	11 - 15	-1.762	7568.990	0.000	1	1.000	0.172	0.000	
	16 - 20	-18.763	7298.900	0.000	1	0.998	0.000	0.000	
	> 20	-19.106	8663.572	0.000	1	0.998	0.000	0.000	
	Wealth status								
	Very poor			0.000	2	1.000			
	Poor	-17.673	3915.129	0.000	1	0.996	0.000	0.000	
	Well-off	0.036	4278.516	0.000	1	1.000	1.037	0.000	
	Residence Status	-16.345	6804.551	0.000	1	0.998	0.000	0.000	
Population increase	**Gender**	-0.783	0.497	2.475	1	0.116	0.457	0.172	1.212
	Education								
	None			11.930	2	0.003			
	Primary	2.397	0.751	10.184	1	0.001	10.994	2.522	47.929
	Secondary	-0.027	0.406	0.005	1	0.946	0.973	0.439	2.156
	Household size								
	< 5			7.226	4	0.124			
	5 - 10	0.749	0.511	2.142	1	0.143	2.114	0.776	5.760
	11 - 15	1.506	0.605	6.195	1	0.013	4.508	1.377	14.756
	16 - 20	0.306	0.758	0.162	1	0.687	1.357	0.307	5.999
	> 20	1.279	0.813	2.477	1	0.116	3.594	0.731	17.684
	Household wealth status								
	Very poor			0.107	2	0.948			
	Poor	0.018	0.469	0.001	1	0.970	1.018	0.406	2.553
	Well-off	0.173	0.622	0.077	1	0.781	1.189	0.351	4.021
	Residence Status	-0.985	0.526	3.502	1	0.061	0.373	0.133	1.048
Timber harvesting	**Gender**	0.048	0.527	0.008	1	0.928	1.049	0.373	2.945
	Education			12.017	2	0.002			
	None	-0.703	0.941	0.559	1	0.455	0.495	0.078	3.128
	Primary	-0.560	0.793	0.499	1	0.480	0.571	0.121	2.702
	Secondary	1.155	0.391	8.720	1	0.003	3.175	1.475	6.837
	Household size								
	< 5			18.958	4	0.001			
	5 - 10	0.270	0.454	0.355	1	0.551	1.310	0.538	3.190
	11 - 15	0.761	0.550	1.912	1	0.167	2.140	0.728	6.295
	16 - 20	3.333	0.940	12.587	1	0.000	28.030	4.445	176.749
	> 20	2.850	0.983	8.411	1	0.004	17.281	2.519	118.556
	Household wealth status								
	Very poor			1.650	2	0.438			
	Poor	0.376	0.449	0.702	1	0.402	1.456	0.604	3.509
	Well-off	-0.197	0.619	0.101	1	0.750	0.821	0.244	2.764
	Residence Status	2.172	0.498	19.039	1	0.000	8.773	3.308	23.272
Poor forest management	**Gender**	15.711	5015.020	0.000	1	0.998	66.574-6	0.000	
	Education								
	None			0.000	2	1.000			
	Primary	16.844	3871.453	0.000	1	0.997	20.657-6	0.000	
	Secondary	-0.289	9819.178	0.000	1	1.000	0.749	0.000	
	Household size								
	< 5			6.269	4	0.180			
	5 - 10	16.720	5038.199	0.000	1	0.997	18.261-6	0.000	
	11 - 15	-0.461	7798.224	0.000	1	1.000	0.630	0.000	
	16 - 20	0.395	9632.270	0.000	1	1.000	1.484	0.000	
	> 20	20.325	5038.200	0.000	1	0.997	67.118-7	0.000	
	Household wealth status								
	Very poor			2.535	2	0.282			
	Poor	-0.705	1.633	0.186	1	0.666	0.494	0.020	12.137
	Well-off	-2.798	2.077	1.815	1	0.178	0.061	0.001	3.569
	Residence Status	0.843	1.630	0.267	1	0.605	2.322	0.095	56.647
Fire	**Gender**	-0.261	0.717	0.133	1	0.716	0.770	0.189	3.138
	Education								

	None			0.698	2	0.705			
	Primary	-0.413	0.530	0.609	1	0.435	0.661	0.234	1.868
	Secondary	-0.622	1.214	0.263	1	0.608	0.537	0.050	5.792
	Household size								
	< 5			7.141	4	0.129			
	5 - 10	0.072	0.678	0.011	1	0.916	1.074	0.285	4.054
	11 - 15	1.487	0.725	4.205	1	0.040	4.423	1.068	18.322
	16 - 20	-19.011	9656.472	0.000	1	0.998	0.000	0.000	
	> 20	-0.237	1.298	0.033	1	0.855	0.789	0.062	10.040
	Household wealth status								
	Very poor			0.446	2	0.800			
	Poor	-0.007	0.653	0.000	1	0.992	0.993	0.276	3.574
	Well-off	0.473	0.881	0.288	1	0.592	1.604	0.285	9.026
	Residence Status	-0.264	0.611	0.186	1	0.666	0.768	0.232	2.544
Honey harvesting	**Gender**	17.385	5009.336	0.000	1	0.997	35.506-6	0.000	
	Education								
	None			1.782	2	0.410			
	Primary	18.470	3985.889	0.000	1	0.996	10.503-6	0.000	
	Secondary	20.702	3985.889	0.000	1	0.996	97.933-7	0.000	
	Household size								
	< 5			2.310	4	0.679			
	5 - 10	0.266	1.454	0.033	1	0.855	1.305	0.075	22.556
	11 - 15	1.782	1.538	1.342	1	0.247	5.941	0.291	121.139
	16 - 20	-17.139	8057.911	0.000	1	0.998	0.000	0.000	
	> 20	1.525	1.793	0.723	1	0.395	4.594	0.137	154.310
	Household wealth status								
	Very poor			4.765	2	0.092			
	Poor	-2.257	1.147	3.868	1	0.049	0.105	0.011	0.992
	Well-off	-3.564	1.946	3.354	1	0.067	0.028	0.001	1.285
	Residence Status	-18.523	5628.868	0.000	1	0.997	0.000	0.000	

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