

Table S1. Sample data collection localities in the western Gurage socio-ecological production landscape.

Jefoure road	District	Agro-ecological zones	Road length	Road width	Management (quality)	Settlement history
Aegera	Gumer	Cool moist	Short	Medium	Good	Old
Agured/ Ener Gedam	Tepid sub-humid	Tepid sub-humid	Short	Narrow	Medium	Old
Boqeta	Abesghe	Warm	Short	Medium	Low	New
Cheret	Mihurena Aklil	Tepid sub-humid	Long	Wide	Good	New
Debesa	Ezha	Cool moist	Long	Medium	Medium	Old
Demberi	Enemoherna Ener	Tepid sub-humid	Long	Wide	Good	Old
Desene	Ezha	Tepid sub-humid	Medium	Medium	Medium	Old
Geharad	Enemoherna Ener	Tepid sub-humid	Medium	Wide	Good	Old
Inagera	Cheha	Tepid sub-humid	Long	Medium	Good	Old
Kentuat	Gedebano Gutazer Wolene	Cool moist	Long	Narrow	Low	New
Luqe	Cheha	Warm	Short	Medium	Medium	New
Mamochema	Ezha	Cool moist	Medium	Wide	Medium	Old
Yadezer Yezhiera	Mihurena Aklil	Cool moist	Medium	Wide	Medium	Old

Table S2. Sample interviewed participants profile in selected Jefoure roads ($N = 28$).

Sex	Male	Female				
Number	20	8				
Age	<20	20–40	40–60	>60		
Number	3	3	14	8		
Religion	Christian	Muslim				
Number	20	8				
Occupation	Farmer	Religious servant	Crafting	Kebele chairperson	Development agent	
Number	18	2	2	4	2	
Education	Illiterate	Religious school	Primary school	High school	College	
Number	8	3	8	5	4	

Table S3. Sample focus group discussions participants profile in selected Jefoure roads ($N = 98$).

Jefoure road	Sex		Age		Occupation			Local Role			
	Male	Female	<40	>40	Farmer	Development agent	Elder	Religious servant	Youth	Kebele chair person	Development agent
Agera	5	3	2	6	8		4	1	2	1	
Abiret	4	3	3	4	6	1	2	1	2	1	1
Anzere	5	2	4	3	3	2	4		1	1	1
Boqeta	5	2	2	7	6	1	3		2	1	1
Cheret	4	2	2	4	5	1	2	1	1	1	1
Cheza	4	2	2	4	5	1	3		1	1	1
Debesa	7	2	2	7	8	1	5	1	1	1	1
Desene	6	2	3	5	6	2	4		2	1	1
Ener Gedam	5	2	2	5	4	1	2	1	1	1	1
Geharad	6	3	2	7	8	1	4	1	1	1	1
Inagera	5	2	2	5	5	1	4	1	1		
Kotergedera	6	2	2	6	7	1	4	1	1	1	1
Luqe	7	2	4	5	6	2	3		2	1	1

Table S4. Reporting categories of NCP with the indicator for assessment by Jefoure roads (based on [2]).

Categories	NCP reporting categories	Indicator for assessment
Material NCP	Transportation	A route for natural land transport mode for humans, animal, and vehicles
	Grain threshing floor	Enables places for a threshing floor
	Feed	Places for production of feed (fodder) for domesticated animals
	Materials	Places for production of materials for construction
	Energy	Places for production of biomass-based fuels
Nonmaterial NCP	Learning and inspiration	Places for local council assembly meeting by judicial services and meeting places for various groups for sharing experiences
	Physical and psychological experiences	Places for playing traditional games, spending leisure time and recreations
	Supporting identities	Landscape for spiritual and religious activities
		Landscape for social services (such as a wedding, mourning ceremonies)
		Landscape creating an identity, sense of place, and bequest values
Regulating NCP	Habitat creation and maintenance	Provide habitats for the remaining vascular plant species
	Regulation of climate	Biological carbon storage and sequestration
	Regulation of freshwater quantity	Regulation of flow to water-dependent natural habitats
	Physical protection of soil and sediments from erosion	Long-term maintenance of soil structure and processes

Table S5. Trends in the uses of ecosystem services in different Jefoure roads.

NCP Categories	Services/ Sites	1	2	3	4	5	6	7	8	9	10	11	12	13	Decrease (%)	No change (%)	Increase (%)
Material NCP	Vehicle transport	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	↑	0	0	100
	Grazing land	—	—	↓	—	—	—	—	—	—	—	↓	—	—	13	87	0
	Grain threshing floor	↓	↓	↓	↓	↓	↓	↓	—	—	↓	—	—	—	61	39	0
	Production of timber	↑	↑	↑	↑	↑	↑	↑	—	—	—	—	↓	↓	18	30	52
Non-Material NCP	Traditional religion	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	100	0	0
	Christianity & Muslim	—	—	—	—	—	—	—	—	—	—	—	—	—	0	100	0
	Judicial services	↓	↓	—	—	—	—	—	—	↑	—	—	—	↓	27	67	7
	Meeting place	—	↓	—	—	—	↓	—	—	↑	↑	↓	—	↓	40	47	13
	Social services	↓	—	—	↓	—	—	—	—	↓	↑	↓	—	↓	40	53	7
	Recreational values	↓	↓	↓	—	—	—	—	—	↑	↑	↓	—	↑	40	40	20
	Aesthetic value	↑	↓	↓	—	—	—	—	—	↑	—	↓	—	↑	27	53	20
	Identity	—	↓	↓	—	—	—	—	—	↑	—	↓	—	—	33	60	7
	Playing ground	—	↓	↓	↓	—	—	—	—	—	—	↓	—	—	27	73	0
	Traditional songs	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	100	0	0
	Mental & physical health	↑	↓	↓	—	↑	—	—	↑	—	—	↓	↑	—	27	47	27
Regulating NCP	Habitat and maintenance	↑	—	↓	—	—	—	—	—	—	—	↓	—	—	7	87	7
	Carbon storage	↑	—	↓	—	—	—	—	—	—	—	↓	—	—	13	87	0

Temperature regulation	↑	—	↓	—	—	—	—	—	—	↓	—	—	13	87	0
Protection of soil	—	—	↑	—	—	—	—	—	—	↑	—	—	0	73	27
Water flow regulation	—	—	↓	—	—	—	—	—	—	↓	—	—	27	73	0

(↑: Increase, ↓: Decrease, —: No change).

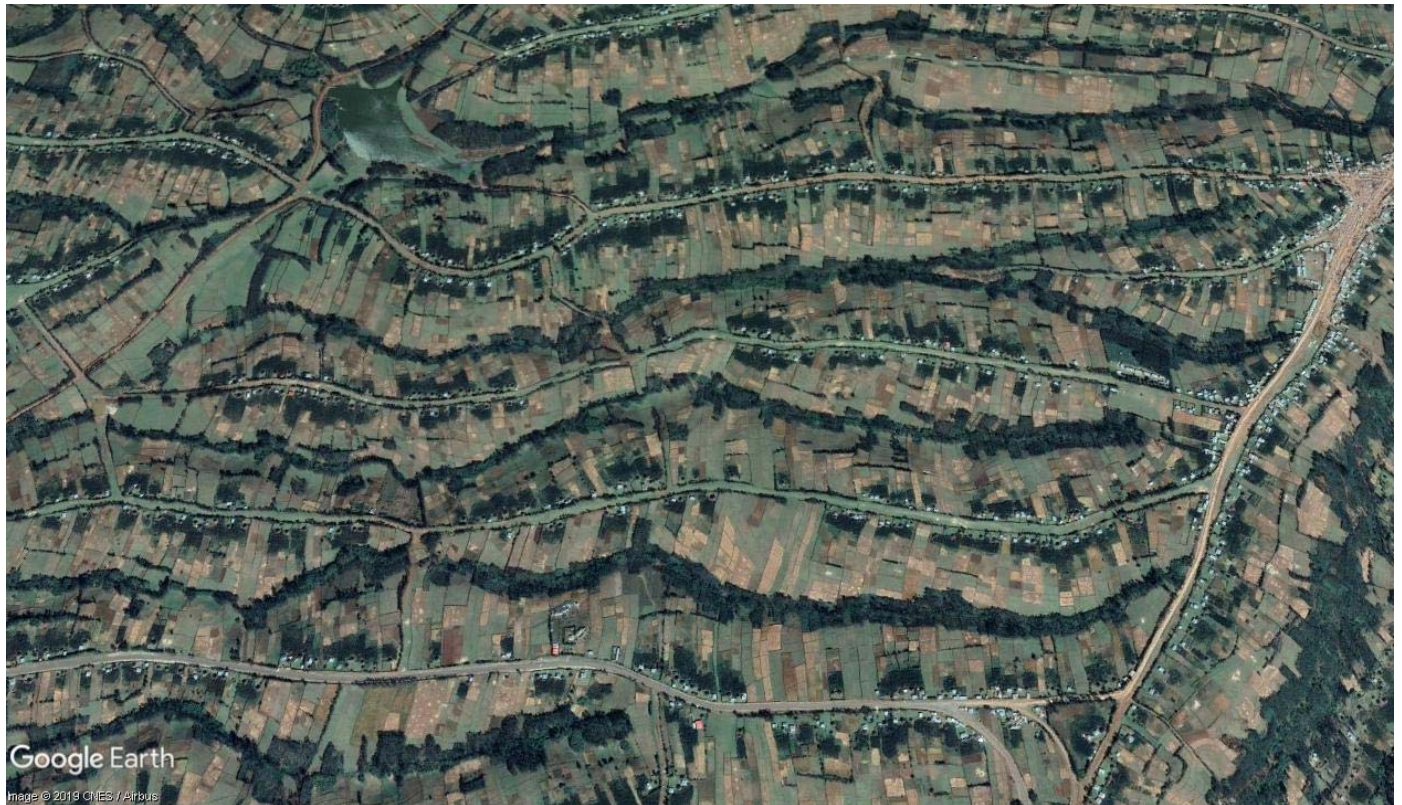


Figure S1. The Gurage socio-ecological landscape settlement pattern following the Jefoure roads (Source: Google Earth (2019)).



Figure S2. Socio-cultural practices that take place on Jefoure roads (source: Tourism Culture and Sport Office (Gurage zone)).