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Introduction

- What we call as tropical forest-agriculture frontiers are areas where forests are being territorialized, conserved or converted into commercial agriculture,. These processes raise issues of social and environmental justice, as the benefits of these changes are frequently not equally distributed, with elites and external investors often benefiting more than locals. In that, understanding local perceptions about changing frontiers helps foster dialogue among diverse actors for more equitable, and sustainable policies.



Mosaic patterns of swidden agriculture being transformed into rubber as seen in the background

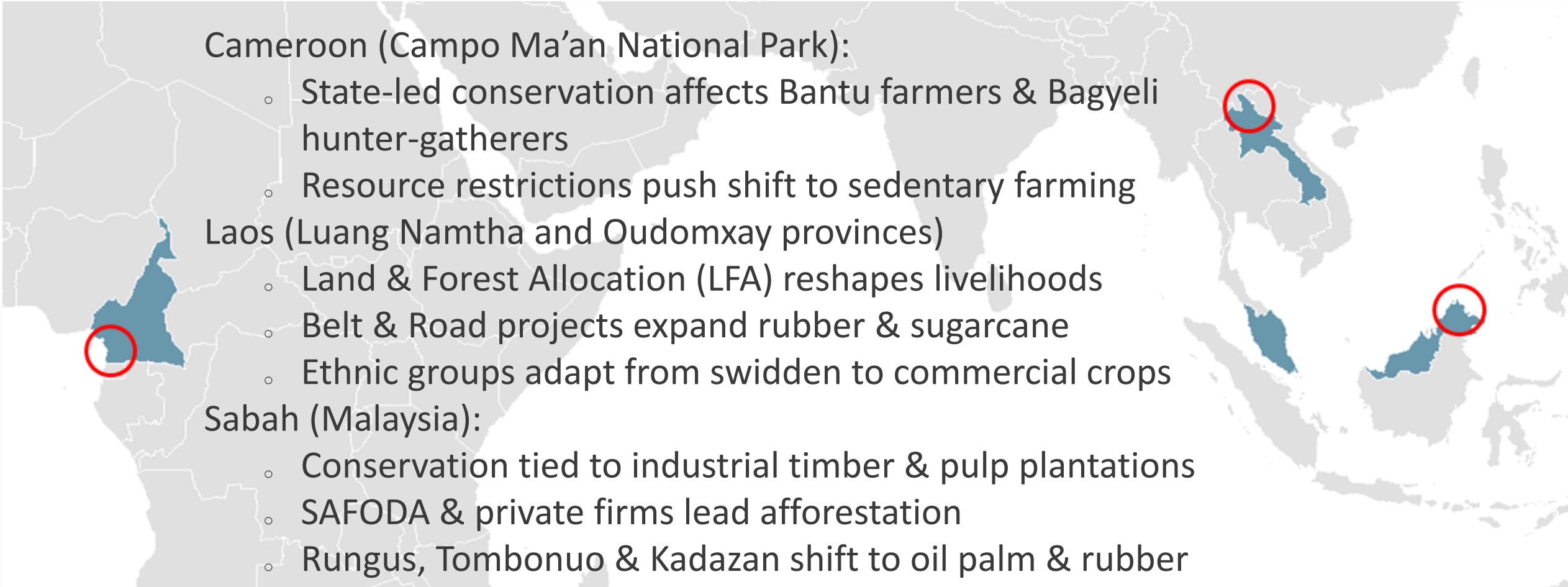
Research Questions & Objectives

- Regarding socio-environmental changes around them, how do locals interpret fairness and how does perceived fairness differ across regions?
- What are the underlying factors affecting their perceptions?
- To understand (measure) fairness via social & environmental justice (Pascual et al. 2014; McDermott et al. 2012)
- To contribute to global debates amid rising inequality (UNDP 2019)

No universal definition of “Perceived fairness”

- Here we understand it as the individual’s subjective judgment about the equity of a process or outcome. A psychological construct influenced by both objective factors and personal perceptions (experiences, emotions, cultural norms, and social context).

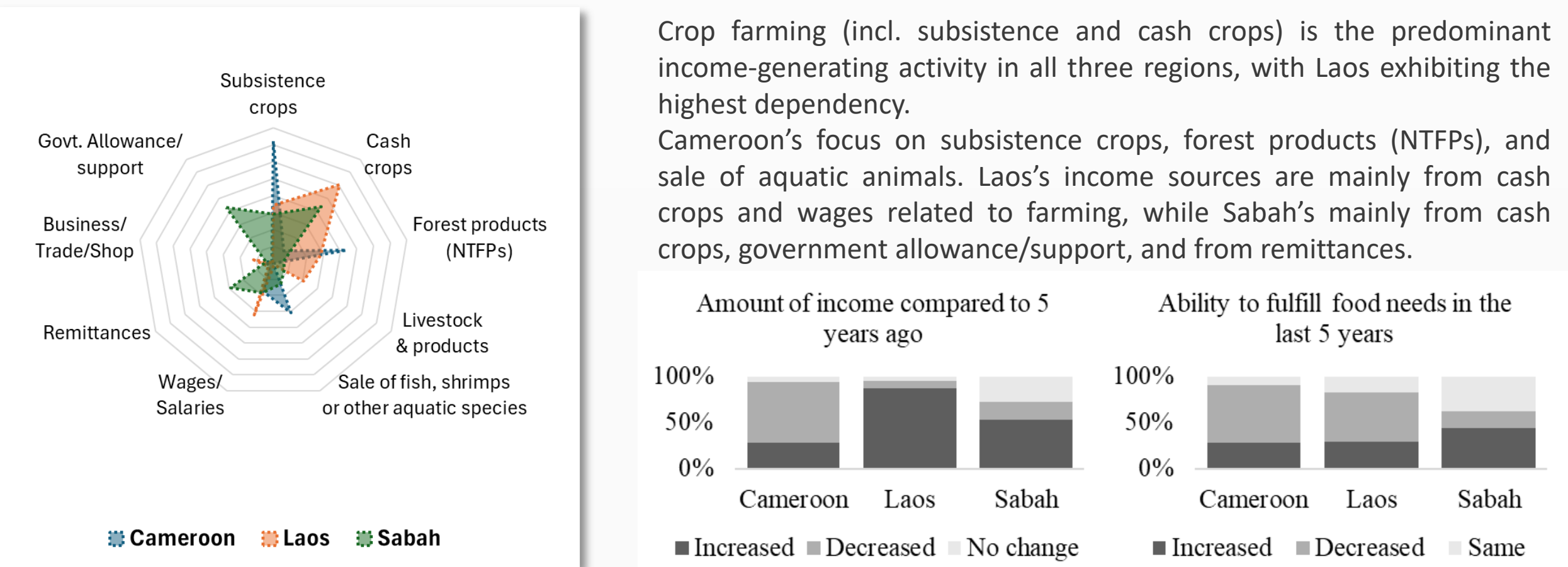
Study areas



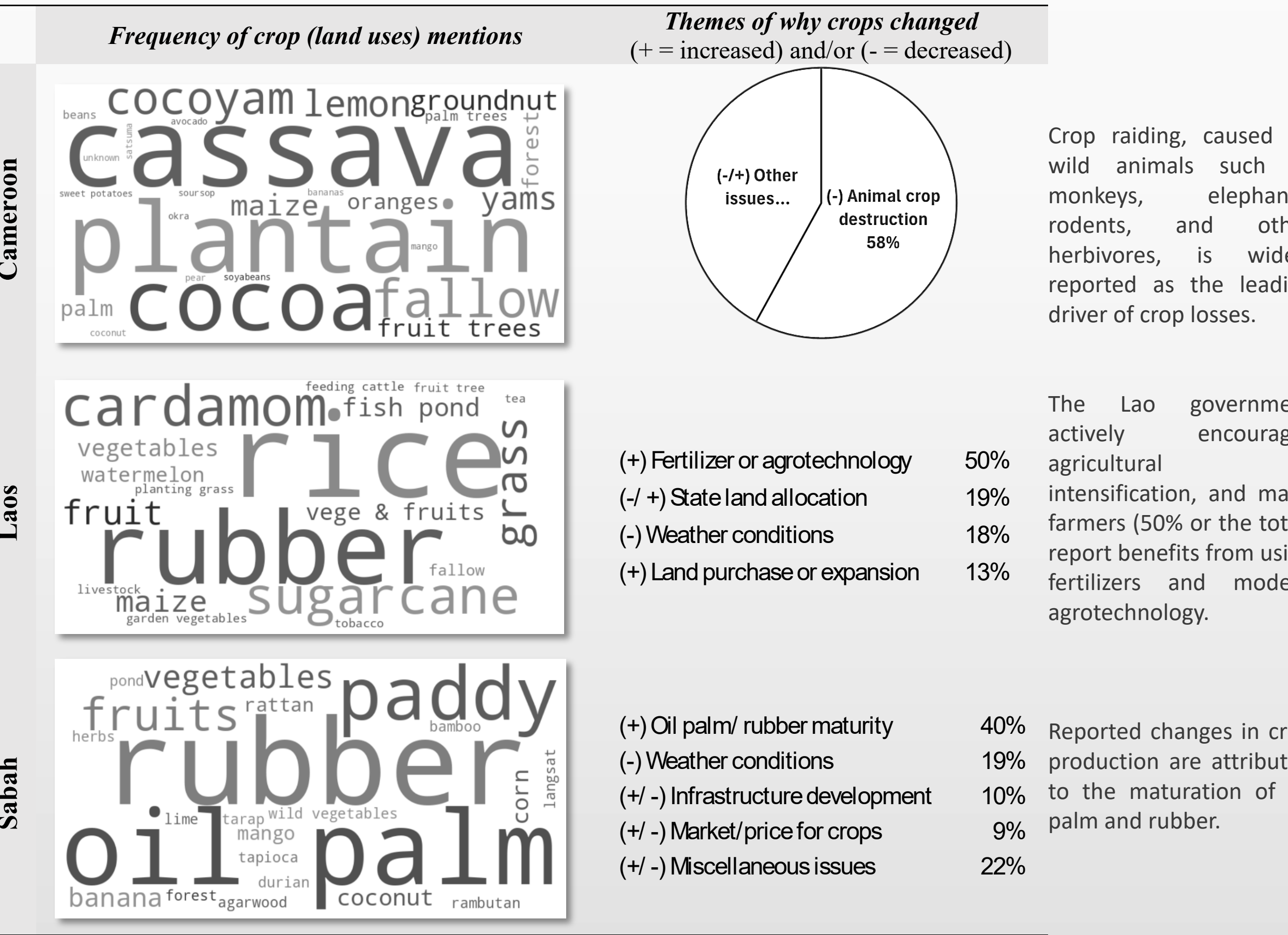
Methods

- Common framework: participatory methods (290 participants) ethics, and protocols
- Thematic, descriptive & inferential analysis

Results & Discussions

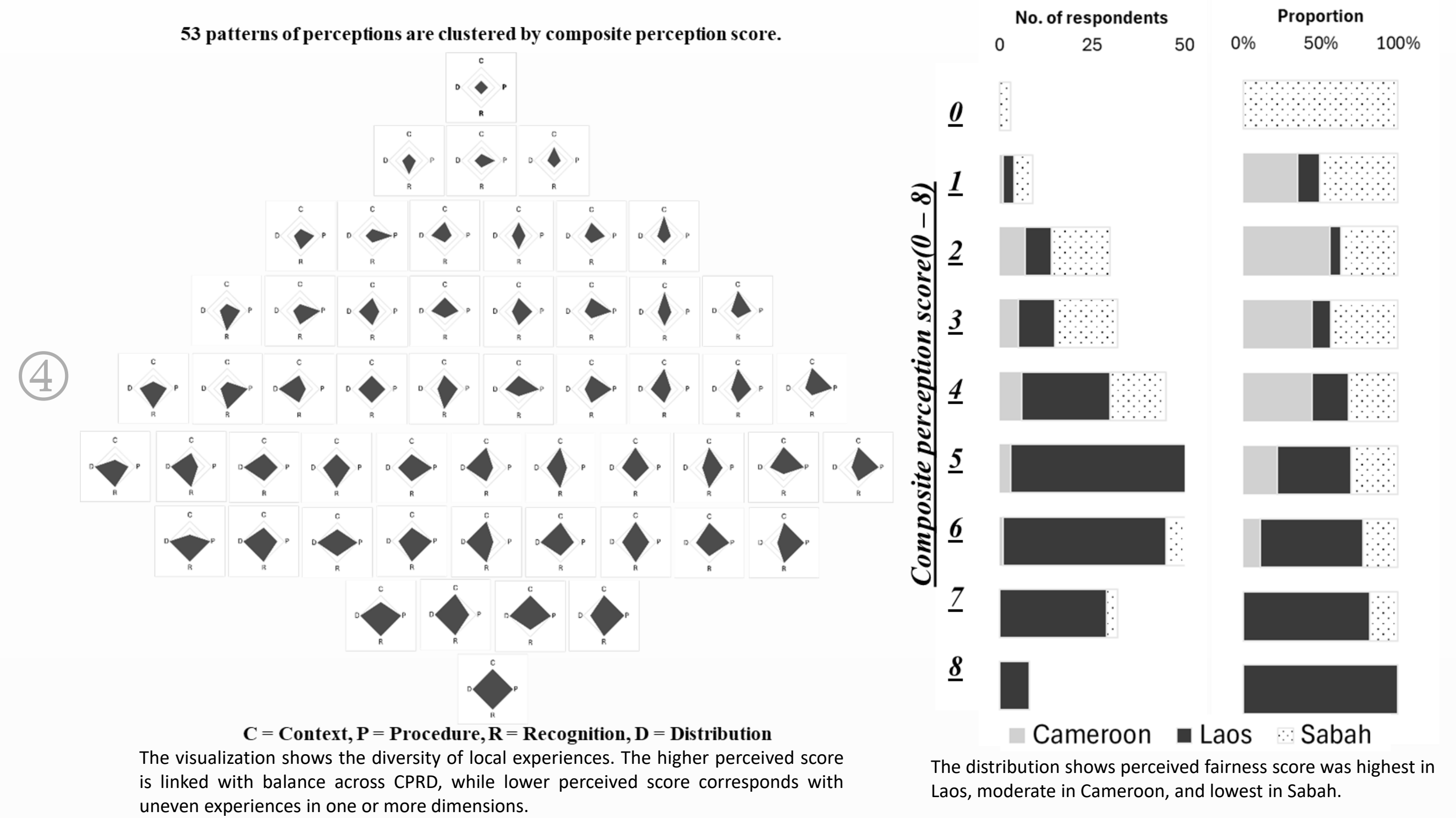
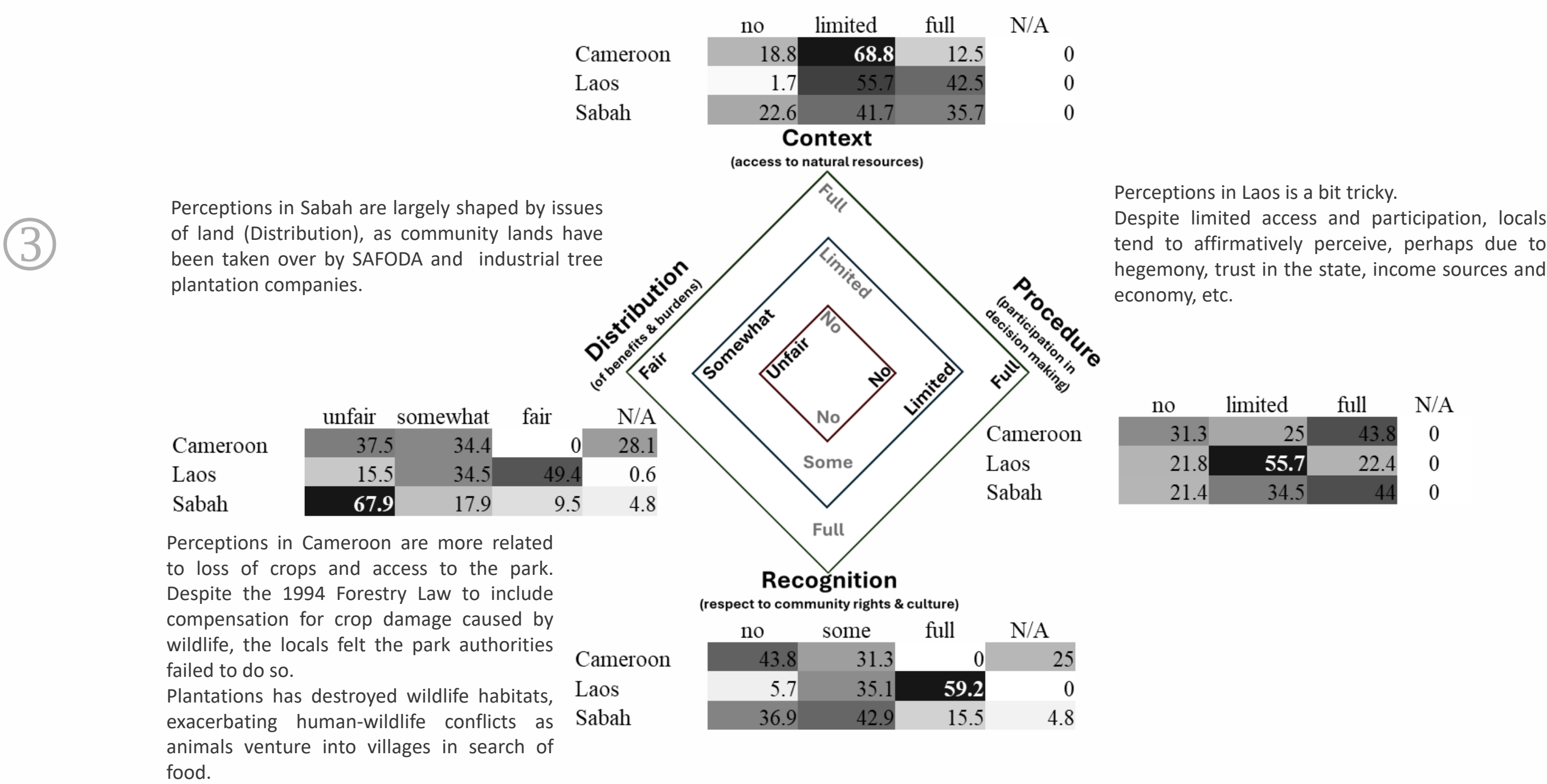


(b) Income sources



Decline in access to land, and forests resources is the common pattern in all regions.

- In Cameroon, access restricted by stricter conservation policies. “We would at first have free access to the forest with guns and to kill any animal, but with the park, access is now difficult. Now, if you are caught with some kind of animal, it is considered poaching.” “At first, we didn’t have any problem hunting but nowadays it is prohibited, sometimes even killing a category c animal e.g., hare is considered poaching.” (some quotes of Cameroonian respondents, 2022)
- In Laos, access declining mainly due to agricultural commercialization and population pressure. State policies also play, but not as strong as the population issues. “Due to the increase in population, forest resources are decreasing, and land use is limited.” “Because the state has come to plan management, there are boundaries in management, so it is not possible to enter and use the forest area independently.” (some quotes of Laotian respondents, 2024)
- Sabah is a story of enclosure — where corporate/ government projects (SAFODA, acacia plantations) transformed open communal forests into restricted, managed landscapes. Villagers face loss of ancestral lands, reduced access, ecological decline, and economic dependence. A minority still access forest products, but overall, freedom, livelihood security, and ecological integrity have declined. “Before this, land belonged to the indigenous peoples. In the 1980s, land was gazette to SAFODA.” “Opening of land by the developer company destroyed the habitat of existing forest such as medicine and fish.” (some quotes of Sabah respondents, 2024)



	ii	iii	iv	v	vi	vii	viii	ix	x	xi	Composite perception	
	Education	Income-related	Food	Land	Life satisfaction	C	P	R	D			
Cameroon	i) Age (Year)	.365*	-0.18	0.32	0.104	0.214	0.012	0.095	0.149	-0.153	-0.171	0.028
	ii) Education levels	1	.407*	0.345	0.131	-0.062	-0.012	-0.029	-0.285	-0.091	-0.288	-0.295
	iii) Annual income (USD)		1	0.283	-0.082	-0.078	-0.057	-0.271	-0.24	0.032	-0.381	-0.399
	iv) Changes in income amount			1	-0.016	0.303	0.069	-0.081	0.089	-0.132	-0.164	0.054
	v) Changes in food availability				1	-0.179	0.175	0.298	-0.278	-0.173	-0.023	-0.259
	vi) Land size (Hectare)					1	0.037	-0.005	0.347	-0.288	-0.089	-0.005
	vii) Life satisfaction						1	0.021	-0.1	-0.193	-0.117	-0.254
	viii) Context							1	-0.045	-0.022	0.397	.557**
	ix) Procedure								1	-0.138	0.105	.584**
	x) Recognition									1	-0.054	0.325
	xi) Distribution										1	.635**
Laos	i) Age (Year)	-.266**	0.058	0.008	-0.078	0.089	0.106	0.132	0.024	-0.068	-0.12	-0.028
	ii) Education levels	1	.150*	-0.03	-0.056	0.053	-0.027	-0.142	.190*	0.009	0.053	0.076
	iii) Annual income (USD)		1	.215**	-0.041	.248**	.157*	0.009	0.126	0.004	0.111	0.119
	iv) Changes in income amount			1	.163*	0.101	-0.066	-0.072	-0.099	-0.065	-0.02	-0.117
	v) Changes in food availability				1	-0.106	0.065	.162*	-0.066	-0.039	0.017	0.017
	vi) Land size (Hectare)					1	0.096	-0.037	0.051	-0.044	0.049	0.015
	vii) Life satisfaction						1	0.028	.213**	.225**	.227**	.340**
	viii) Context							1	-0.068	.177*	-0.115	.204**
	ix) Procedure								1	.382**	0.142	.663**
	x) Recognition									1	.411**	.690**
	xi) Distribution										1	.661**
Sabah	i) Age (Year)	-.575**	-0.177	-0.103	-0.011	0.108	-0.089	-0.082	-0.018	0.001	-0.012	-0.052
	ii) Education levels	1	.285*	0.054	0.099	0.04	0.139	-0.17	0.018	-0.183	-0.033	-0.169
	iii) Annual income (USD)		1	0.207	.272*	0.221	0.101	0.049	0.025	-0.002	-0.071	0.019
	iv) Changes in income amount			1	.511**	.492**	.259*	.236*	0.176	0.196	0.01	0.086
	v) Changes in food availability				1	.313**	0.133	-0.166	0.083	-0.017	-0.109	-0.062
	vi) Land size (Hectare)					1	-0.023	.387**	.359**	-0.147	-.274*	-0.138
	vii) Life satisfaction						1	0.016	.256*	.238*	0.069	.254*
	viii) Context							1	-0.129	0.175	0.095	.519**
	ix) Procedure								1	0.087	0.081	.488**
	x) Recognition									1	.364**	.691**
	xi) Distribution										1	.608**

- No significant link between age, education, and perceptions (all regions).
- Higher education generally means higher income — strongest in Cameroon, weaker in Laos and Sabah (where income depends more on land size).
- Land size doesn’t shape perceptions in Cameroon but does in Laos and Sabah.
- In Sabah, larger landowners feel more unfairness and limited access — likely due to land losses to SAFODA and plantation companies.

Wellbeing themes	Total mentions within		
	Cameroon (N=32)	Laos (N=174)	Sabah (N=84)
Income Security	8 ★	178 ★	26
Health & Healthcare Access	23 ★	84 ★	14
Livelihoods & Agricultural Support	11 ★	85 ★	14
Housing & Shelter	9 ★	69 ★	7
Land Access & Land Rights	3 ★	20 ★	54
Family & Children	0 ★	42 ★	4
Infrastructure & Transportation	8 ★	23 ★	14
Water Access & Quality	2 ★	3 ★	27
Education & Skills Development	11 ★	8 ★	9
Electricity & Energy Access	13 ★	0 ★	11

A visual interpretation of the level of total mentions per wellbeing theme within each case region. ★ (Full Star): Indicates the highest level of mentions per wellbeing theme.



(Source: Frits Ahlefeldt)

Key takeaways

- Observed underlying factors include human-wildlife conflicts and land dispossession linked to conservation policies (Cameroon), land titling and inequalities from cash crop farming (Laos), land grabs by state-led agencies (Sabah). Across three regions, the common contextual factor we observed is access to the park, the land, and the forests.
- Perceived fairness is highly subjective, sensitive and shaped by individual differences. Despite subjectivity and individuality, it is also grounded in such objective conditions as income and land security.
- Perceived fairness impacts well-being, often more than objective measures. This study contributes to a methodological approach that allows for more flexible and nuanced understanding of fairness.

Figures & Tables

- ① = Relative importance of primary livelihoods and income sources/ ② = Key insights into crop production and land uses/ ③ = Analytical lens to assess equity and perceptions of fairness / ④ = Patterns of perceptions and distribution of respondents based on the levels of perceived fairness/ ⑤ = Spearman’s correlation matrix (Spearman’s rho. * Significance at 0.05 level (2-tailed); ** Significance at 0.01 level (2-tailed). All variables are ordinal except age, annual income and land size.)/ ⑥ = What is required to have a “good quality of life” in your village?