

## Study on Chinese Herders' Preference for Grassland Ecological Compensation and Its Impact Factors — Base on the survey of two counties in Qinghai Province

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### 1 Introduce

China's Grassland covers an area of 390 million hectares, accounting for more than 40% of the total land area. It is the largest terrestrial ecosystem in China. In order to promote the sustainable development in pastoral region, the "Subsidy and Reward Mechanism for Grassland Ecological Protection" was established in 2011, which became the second ecological compensation mechanism based on ecological elements after the forest ecological compensation mechanism in China. After the institutional reform of the State Council, the State Forestry and Grassland Administration (NFGA) became the department in charge of grassland and forest. NFGA began to explore the long-term mechanism for Grassland Ecological Compensation (GEC).

Qinghai Province is the main pastoral region in China, and it is also the water source of Yangtze River, Yellow River and Lantsang River (Mekong River), where there are different herders with different Religious Belief and Minority. It is of great significance for the formulation of long-term GEC mechanism and the implementation of precise policies to study the local herders' preference for GEC and its influencing factors.

### 2 Methods

Based on field research and 340 questionnaires for herders from Qilian County and Menyuan County in Qinghai Province, this paper explains the impact of different factors on herders' preference for GEC by Disordered Multiple Logistic (DML) regression (shown as bellowed). The 3 GEC means, Fund Compensation (FC), Policy Compensation (PC) and Substantial Compensation (SC) in Table 1 were used as the dependent variable, and the 17 variables referred to county, demographic characteristics, Family characteristics, grassland characteristics and policy cognition in Table 2 were used as independent variables for DML regression.

$$\text{logit}P_1 = \ln[P_1/P_3] = \alpha_1 + \sum_{n=1}^N \beta_n X_n + \varepsilon_1$$

$$\text{logit}P_2 = \ln[P_2/P_3] = \alpha_2 + \sum_{n=1}^N \beta_n X_n + \varepsilon_2$$

$$\text{logit}P_3 = \ln[P_3/P_3] = \ln 1 = 0$$

Table1 Dependent variable settings and related characteristics

GEC means	Description	frequency	Total frequency	Total percent
Fund Compensation (FC)	payments will be automatically transferred directly to the personal bank accounts of herders.	237	237	69.71%
Policy Compensation (PC)	Skill education	20	69	20.29%
	low-cost loans policy	7		
	forage price subsidies policy	33		
	Other ways of earning money	5		
	Implementation of community development projects	4		
Offset tax and charges	0			
Substantial Compensation (SC)	Infrastructure construction such as water, electricity, roads and sheds	34	34	10.00%
	Grain and oil compensation	0		
Total		340	340	100%

### 3 Results

The DML regression results can reflect the average impact of each independent variable on herders' preference for GEC. The estimated results of the regressions are shown in Table 2.

As shown in the Table 2, the impact of some independent variable involved county, demographic characteristics, Family characteristics, grassland characteristics on herders' preference for GEC means is significant. It is found that policy cognition has no significant to the preference.

### 4 Conclusions

- FC is most popular preference for GEC means, followed by PC, and SC is the least.
- The preference for GEC means is influenced by many factors, including county, demographic characteristics, Family characteristics, grassland characteristics.
- Compared with PC, herders from Menyuan county are more preference for SC than those from Qilian county.
- Compared with SC, herders who believe in Buddhism are more preference for PC and FC, especially PC than those who believe in Islamism.
- Compared with PC and FC, herders with "high school and above" education are more preference for SC than group with no school education.
- Compared with SC, herders with "primary or junior high school" education are more preference for PC and FC than group with no school education.
- Compared with SC, "family members are often ill or occasionally ill" group are more preference for FC than "family members have Serious illness" group.

- Compared with SC, herders whose "household deposits range from 10000 RMB to 50000 RMB" more preference for PC than herders whose "household deposits less than 10000 RMB".
- Compared with SC, herders who have average quality of grassland more preference for PC than herders who have bad quality of grassland.
- The study believes that FC is still the main compensation method for a period of time, but it should be more diversified and detailed for different groups and their demands in the sustainable compensation mechanism and policy design.

Table2 Influence factors and results of regression

Explanatory variables		Dependent variable	
		PC	FC
constant term		4.130*** (1.289)	6.437*** (1.086)
county	Menyuan county	-1.094* (0.643)	-0.913 (0.580)
demographic characteristics	male	1.246 (0.852)	0.797 (0.745)
	Buddhism	2.426*** (0.654)	1.601*** (0.499)
	no religion	0.768 (0.762)	0.754 (0.574)
	high school and above	-11.430*** (0.598)	-11.298*** (0.523)
	primary or junior high school	6.097*** (0.518)	6.313*** (0.464)
family characteristics	labor quantity	0.060 (0.231)	-0.058 (0.208)
	family members are less ill or healthy	-0.685 (0.679)	-1.030 (0.627)
	family members are often ill or occasionally ill	0.720 (0.505)	0.980** (0.459)
	household deposits of more than 50000RMB	0.116 (0.529)	0.133 (0.472)
	household deposits range from 10000 to 50000RMB	0.946** (0.415)	0.358 (0.352)
grassland characteristics	large scale of grassland	-0.408 (0.545)	-0.085 (0.483)
	big scale of grassland	0.173 (0.531)	-0.060 (0.466)
	middle scale of grassland	-0.224 (0.462)	0.029 (0.396)
	good quality of grassland	-0.152 (0.918)	0.010 (0.880)
	average quality of grassland	1.362** (0.595)	0.631 (0.558)
policy cognition	know about GEC policy	0.287 (0.799)	0.267 (0.671)
McFadden chi-square		0.1467	
R <sup>2</sup>		0.2630	
Sample capacity		340	

Note: \*\*\*, \*\*, and \* represent significant levels at 1%, 5%, and 10% respectively.

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