

Tibetan pastoral institutional responses to a changing socio-ecological system in China

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Introduction

Market-based institutional interventions have been dominant paradigms of recent rangeland management policies in China and worldwide that tends to replace the community customary institutions. There are rich literatures and case studies providing in-depth understanding on the effectiveness of market-based institutions in rangeland management (Reeson *et al.*, 2011. Lai and Li, 2012). And their recommendations emphasize correction of rangeland management policies based on the framework of market-based or custom-based institution. However, very few studies focus on the processes of how market-based institutional interventions interacts with local socio-ecological characteristics and local customary institutions in actual rangeland management practices. Therefore, this paper argue that instead of debating how to correct rangeland management policies based on certain framework, it is critical to study the implementation of processes of the market-based institutional interventions. Recent studies state that understanding policy processes through an examination of knowledge/narratives, actors/networks, and politic/interests can help with identifying policy spaces for change and improvement (Keeley and Scoones, 2014). Based on this understanding, this paper studies how does market-based rangeland transfer has been evolved into diverse institutional arrangements as it interacts with local socio-cultural systems, community organization and customary institutions in the pastoral regions of the Qinghai-Tibet Plateau?

This paper applies the case of rangeland transfer system in the pastoral regions of China to address this question. In 2008, China officially promoted rangeland transfer system based on completion of rangeland household contract systems that tends to re-aggregate rangeland resources to develop more optimal and intensive animal husbandry (MOA, 2008). However, our past 4 years of field work in the pastoral regions of China realize that there are diverse institutional arrangements evolving in actual rangeland management practices to adapt to the changing socio-ecological system including marketization, population growth and climate change impacts. One commonly observed institutional innovation is the community-based tradable grazing right system, where combination of market mechanisms and community customary institutions are applied.

Materials and Methods

This paper applies two comparative case study sites from the pastoral regions of Qinghai-Tibetan Plateau, where one village engaged with tradable grazing right systems, while the other village implemented rangeland transfer system as government policy. The used data in this paper was collected in three years of fieldwork from 2012-2014. The field data collection including semi-structure interview with pastoral households, and vegetation plot samples in the two case study sites. This paper compares the impacts of the two different institutional arrangements on livestock production, herder livelihood and rangeland ecosystem. For analysis of impacts on livestock production, this paper applies livestock mortality, productivity and rate of livestock production return as indicators. For analysis of impacts on livelihood, this paper measures the level and distribution of pastoral household asset. Studies pointed out that in arid environment with high ecological variability, livestock production not only generates income for herders, but also serve the purpose of long-term wealth savings and investment. Therefore, a pastoral household asset is comprised of market-based net-income (the annual cash net income from selling livestock and livestock products), consumption-based asset (the dairy products and livestock each household consume each year) and the annual livestock savings after mortality, sale and personal consumption. For impacts on rangeland ecosystem, we analyze the impacts on level of landscape fragmentation using distribution of vegetation composition in spatial scale. Based on this, this paper analyzes the involved actor networks, policy discourses and interests of herders and local governments in the implementation of these two systems in actual practices to discuss why these two institutional arrangements are resulted in different outcomes.

Results and Discussion

Impacts on livestock production: First, reduction of sheep mortality from 14% to 10% of total livestock between pre- and post-institutional changes was observed under tradable grazing right system (TGRS) while there was increase of mortality from 9% to 13% under rangeland transfer system (RTS). Second, livestock production costs in RTS were 43% of higher, but livestock production incomes were 5% of lower in RTS. Third, the distribution of livestock production costs among the household samples demonstrates that all households were concentrated between 10% and 30% under TGRS, while households were distributed between 10% and 100% in RTS, reflecting higher level of production costs differentiation among the households.

Impacts on livelihood: First, average household asset levels were higher in RTS between 2012 and 2013, though it was lower than TGRS in 2014. In addition, household asset levels have reduced after implementation of RTS, while it has been increased under TGRS. Second, income inequalities widened under the market system between 2013-2014, compared to the TGRS.

Impacts on ecosystem: Using distribution of vegetation composition in spatial as indicator, it was observed that the level of rangeland fragmentation was higher under TRS, while under TGRS, vegetation composition were uniformly distributed with small variances on vegetation coverage between the plot samples in spatial scales.

Discussion

Based on these findings, it can be stated that community-based tradable grazing right system is more effective improvement of livestock production, herder livelihood and sustainable use of rangeland ecosystem in compare to rangeland transfer system. Through detail analysis of the policy processes of rangeland transfer system, it can be stated that when rangeland transfer system tries to replace the customary institutions, it addresses the equality in distribution of property rights of rangelands among the individuals, though it failed to consider the dynamic relationships between the grazing behavior of livestock. Consequently, it increased livestock production costs though undermined herders' ability to adapt to the ecological variability to maintain and or improve livestock production. Comparatively, under tradable grazing right system, the narratives for implementation of the institution changes include clarification of grazing rights to individual households for equal and secured distribution of rights while not losing the collective use of the rangelands. In addition, herders have awareness of government requirements for initiating market-based institutions to achieve efficient allocation of rangeland resources. Given these narratives, a cooperative network is emerging between local government, community and individual households to maintain the tradable grazing right system, which is able to address the interests of all three key actors.

Conclusion

Based on the abovementioned findings and discussion, this paper articulates the understanding that clarifying and securing individual rights in rangeland management is important, but to do so does not need to dismantling community organization and customary institutions, and building physical boundaries between individual households. Therefore, this paper concludes that when market is embedded in customary institution, a functionally interdependent relationship is evolved to address different aspects of rangeland management systems, and thereby it is more effective in improvement of livestock production and herder livelihood as well as in reduction of wealth differentiation. In addition, even though top-down policy approach is dominant in China, there is space for more constructive interplay between local government, individual herders and pastoral community organizations in rangeland management practices, which facilitates a co-adapting and embedded interaction between market-based institutions and community customary institution in rangeland management.

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