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Evaluation of Socio-economic Consequences of Rangelands Transfer to Ranchers (Case Study: Kohgiluyeh and Boyer-Ahmad Province)

Seyyed Ebrahim Kazemi[1] and Hossein Pouzesh* [2]

[1]Agricultural and Natural Resourses Center Kohgiluyeh and Boyer-Ahmad Province
[2]Young Researchers Club, Yasooj Branch, Islamic Azad University, Yasooj, Iran

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ABSTRACT

In this paper, socio-economic consequences of range management projects in Iran (Kohgiluyeh and Boyer-Ahmad province) with an area of 1624000 hectares in the south west of the country surrounded by Esfahan and Chahar Mahal va Bakhtiari provinces in the North, East by Fars, west by Khuzestan and south by Bushehr has been evaluated. Research method in this study is survey method and necessary information has been collected through field study, questionnaire, interview, reviewing documents, etc. From completely random sample and finally, the hypotheses were tested based on available evidence and presented information. Based on investigation it was observed that in 97.8 percent of cases, livestock in excess of the capacity is the factor of causing damage to rangelands that after transfer this factor has been reduced to 27.5 percent. After transfer, rangers' disputes with villagers over property have been reduced to 15.4 percent. Also, after transfer disputes among rangers themselves have been reduced to 4.4 percent. Estimation of income function reveals that after transfer, due to increase in production of rangelands forage and its effect on increase in conversion ratio of forage to lamb plays important roles in household economy.

Keywords: Range, Range management, Transfer, Customary order-immigration, Excessive grazing, Social, Economic, Rangeland capacity.

INTRODUCTION

Rangelands are natural ecosystems whose main characteristic is their endemic vegetation. By placing livestock in the rangelands, humankind is in search of livestock products (2). Rangelands cover most of land surface on the Earth is. According to statistics provided by Cook et al, rangelands cover %47 of the lands on the Earth. The humankind makes use of the rangelands in several ways including livestock products, wildlife, recreational areas and side-products. (10, 11, 15 and 16).

Rangelands in our country cover about 90 million hectares (13 and 14). These areas have been constantly subject to political, social and economic changes and this has caused challenges in the domain of rangeland management. Accordingly, over the time, different policies and trends have been adopted by managers and planners proportionate to the economic, social and cultural situations and structures (7).

One of the policies of rangeland exploitation management adopted following the Islamic revolution in Iran was the arrangement and share-out of rangelands and its transfer to the customary beneficiaries. This idea is based on the

fact that, since rangelands are considered a common resource and the beneficiaries feel no, the degradation of rangelands is growing. If rangelands are shared out and the beneficiaries have a sense of attachment and ownership toward them, they will restore, protect, and make investments in the rangelands, and this could be a source of economic and technical developments in the rangelands (6, 8, 9 and 12).

Since 1988, the county department of Natural Resources took action to prepare and codify rangeland management plans, and practically since 1991, began to transfer rangelands to the beneficiaries with the aim of protection, restoration and optimal development in order to exert a rangeland management with their participation. In this study, the economic and social consequences of various aspects of this policy have been examined, which can guarantee the improvement of rangeland management and the profitability of its strengths, protein supply, soil and water conservation and wildlife protection for the next generations. Accordingly, we used the techniques of field study and had the beneficiaries fill in questionnaires and then we analyzed them by descriptive and inferential methods.

History of Investigation

(1) Carried out a study to "investigate the appropriate exploitation of rangelands in the Kabkian watershed basin of Kohgiluyeh and Boyer-Ahmad Province", and achieved the following results:

1. Despite farmers' knowledge and the ecologically good conditions, the degradation process is not stopped due to the lack of proper management and exploitation of rangelands.
2. The ownership of rangelands is unclear.
3. The transhumants do not feel responsible for rangelands management.
4. The level of dry-lands has been developed by the villagers, and it has effected the degradation of rangelands on steep slopes.
5. The rangelands are common and no livestock breeder has any grazing permit in this area.

In cooperation with the Committee of Agricultural Jihad Kohgiluyeh and Boyer-Ahmad (5) has achieved the following results for comprehensive plans of rangeland management of Gachsaran:

1. The ownership of rangelands should be determined so that the livestock breeders feel the responsibility to protect it.
2. Common husbandry within the confines of common areas is one of the factors of rangeland degradation because a competitive exploitation of rangelands has led to an excessive and premature grazing and has thus caused the degradation of rangelands.
3. Transhumance of the current livestock causes the livestock weight loss, and this is loss-making for the livestock breeders.

MATERIALS AND METHODS

Kohgiluyeh and Boyer-Ahmad Province is one of the leading provinces in executing range management projects; we want to see to what extent the targets have been met after several years from the execution of the projects mentioned in this study, and, by evaluating it, to help managers and planners to better manage the rangelands of the country.

This study intends to investigate the economic and social consequences of rangeland transferral to the livestock breeders and to provide solutions to improve the management of rangelands based on the research findings.

Table 1: The following table status of measurement scale and the variable indicated with relevant question.

Variable	The relevant question	Scale of measurement
Demographic characteristics	1-1-0001-13	Nominal
The extent and location of leased rangelands	1-14 & 1-15	nominal
Profile of household	2	nominal
Active persons in the ranch	3	nominal
Ownership of household livestock and how to divide funds and benefit	4	nominal
income from ranch Before and after the assignment of rangelands	5	nominal
Income from range management and sales of seed and feed before and after assignment of	6	nominal
Number and type of livestock before assignment of	7	Interval, nominal, relative
Source of feed provide before and after assignment of	8	Interval, nominal, relative

Composition and consumption ratio of animal feed before and after assignment of	9	Interval, nominal, relative
Causes of degradation of rangelands before and after assignment of from the viewpoint of Range Managers	10	Interval, nominal, relative
Operations of rangelands Rehabilitation and Improvement after assignment of	11	Interval, nominal, relative
The best way to utilization of the rangelands	13	Interval, nominal, relative
The reason unsuccessful projects of Range Management	14-15-16	nominal, ranking
Effect of assignment of rangelands in creation or reduction social tensions	17	nominal
Effect of assignment of rangelands in reduction or creation administrative problems	17	nominal
Range Managers migration to towns and villages	18	nominal
Status of rangelands divide before or after assignment of	21	nominal
Basis division of rangelands and its motivations	21	nominal
Management of rangelands	23-24-25-26-27	nominal
rangelands technical changes After the assignment of rangelands	22-23-24-25-26-27	nominal
Technical assistances and training after assignment of	19	nominal

Investigation hypotheses

A: Transferral of rangelands to livestock breeders has caused the (increase of) social and tribal disputes among.
B: Transferral of rangelands to livestock breeders has caused administrative tensions and problems.
C: Transferral of rangelands has been effective in the process of quality improvement and in enhancement of the economic value of rangelands.

Table 2: Status of provided Range Management designs from beginning to end year 2000 in Kohgiluyeh and Boyer-Ahmad province

Row	City name	Number of provided designs		Area(ha)		The number of exploiter households		Status of exploitation			
		Number	%	ha	%	households	%	Individual	2-3 persons	4-5persons	More than 5 persons
1	Boyerahmad	99	34.4	117956	27.8	1639	37.8	2	9	16	72
2	Ghachsaran	141	48.9	168311	39.7	801	18.4	37	46	17	41
3	Kohgilouyeh	48	16.7	137859	32.5	1900	43.8	5	4	5	34
Total	Province total	288	100	424126	100	4340	100	44	59	38	147

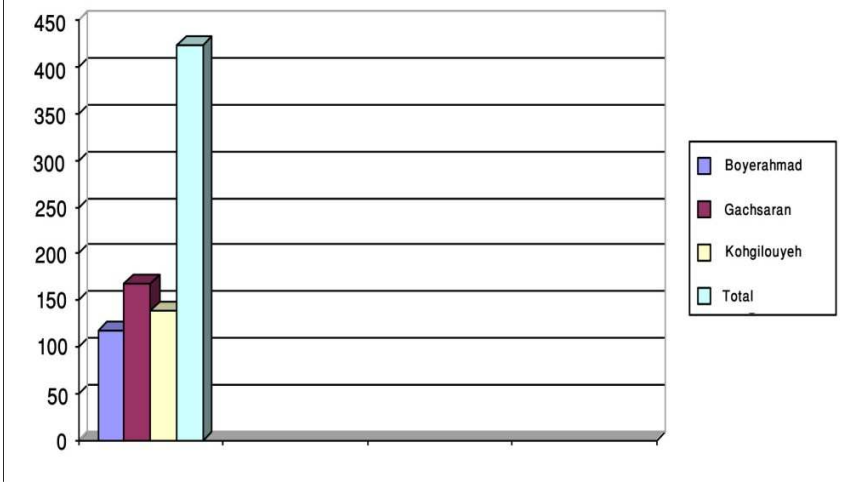

Fig 1: condition of prepared range management plans from beginning to end 1999 in Kohgiluyeh and Boyer-Ahmad province (Area)

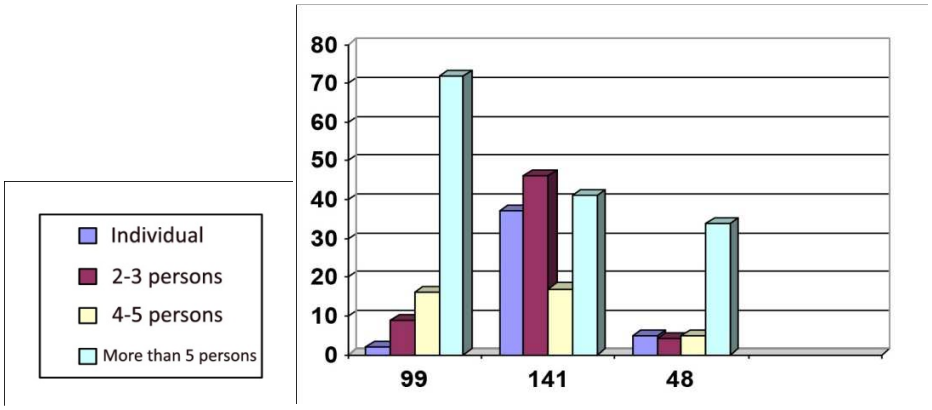

Fig 2: status of prepared range management plans from beginning to end 1999 in Kohgiluyeh and Boyer-Ahmad province (Number of beneficiary families)

Provincial distribution of transferred rangeland projects under study

Fig 3 shows mentioned cases.

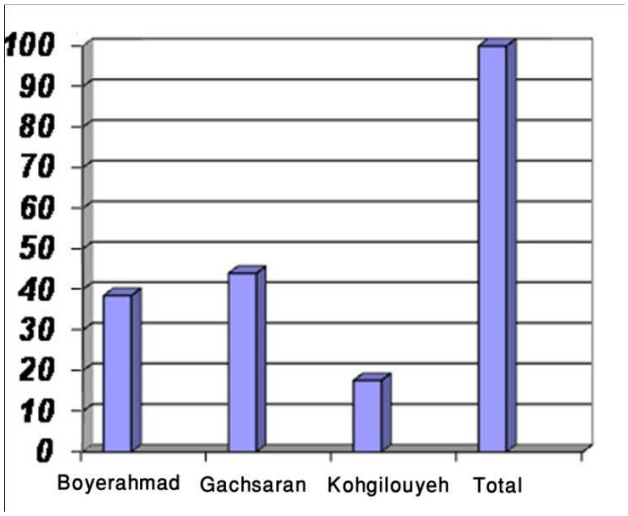

Fig 3: Frequency of transferred projects according to county

Classification of range management projects according to the transferral surface

Diagram 4 shows that the area of rangelands of the studied projects is mostly more than 251 hectares (equivalent to %30.8 of cases) and the least of them is located in a minimum storey area of 0-50 hectares, equivalent to 4.4 percent.

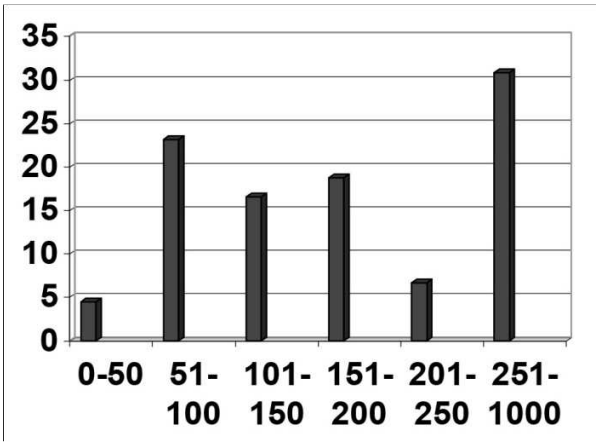

Fig 4: Frequency of area storeys of the transferred projects under study

Classification of studied range management plans on base assignment date

According to the table and chart number 5 most of the range management projects (24 cases equivalent to %26.4) were transferred to the livestock breeders in year 1993, and least of them (3 cases equivalent to 3.3 percent) in year 1996.

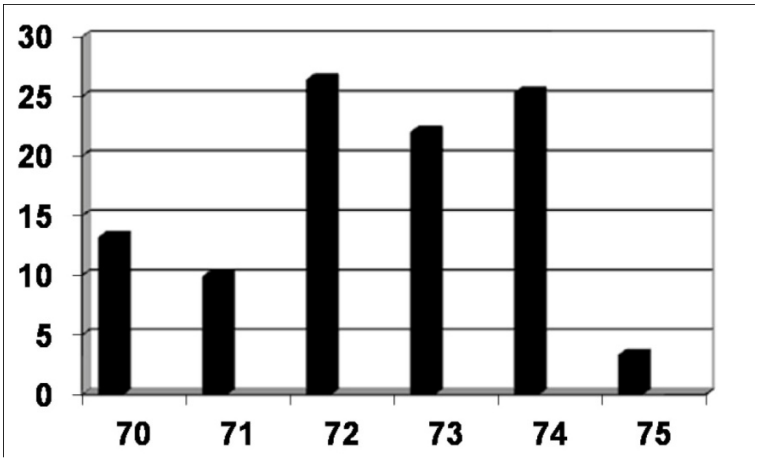

Fig 5: Classification of studied range management plans on base assignment date to range management

Classification of studied range management plans on base type of their management (Individual – sharing)

One of the important indicators of rangelands management and exploitation is the state of the rangeland projects' being common or individual, which can be effective in the success or failure of projects. Table and Figure 6 shows that, in effect, %12.1 of the projects are managed individually, and %87.9 of them are managed by common ownership.

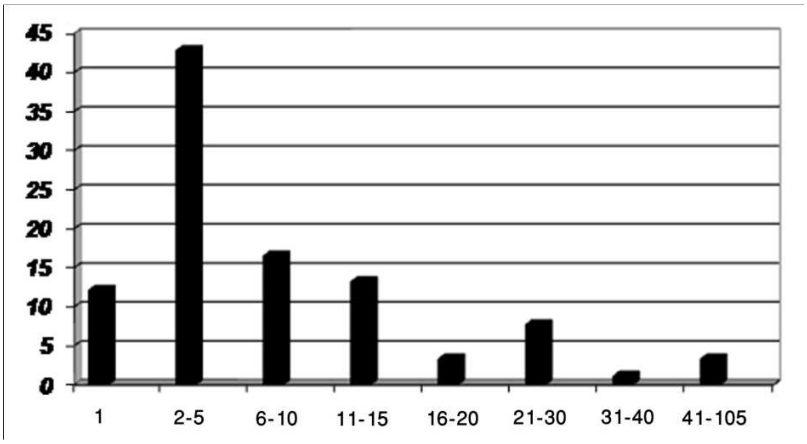

Fig 6: The number of partners in transferred rangeland projects (individual or shared management)

Test of first hypothesis

First hypothesis: investigation of the effectiveness of the transferral of rangelands in engendering or reducing ownership disputes between the livestock breeder with the other villagers before and after the transferral:

According to the contents of the table and chart number (43), of 91 projects under study, a number of 63 ranchers equivalent to %69.2 of the ranchers and livestock breeders stated that before the transferral, they had no disputes with other farmers over grazing rangelands while a number of 28 equivalent to %30.8 stated that they had disputes. Also, of 91 projects under study, about 77 ranchers equivalent to 84.6 percent of ranchers and livestock breeders of stated that after the transferral, they had no disputes with other farmers over grazing rangelands (I.e. the transferral of the rangelands reduced ranchers' disputes with villagers by 15.4percent), and 14 ranchers equivalent to %15.4 of ranchers still spoke of their ownership disputes with other villagers.

Test of first hypothesis

According to the test X2, the transferral of rangelands increased social disputes and the first hypothesis is rejected. The comparison of the X2 obtained from the sample (17.74) and the X2obtained from table (3.84) shows that the frequencies obtained were not resulted by chance. Therefore, the information obtained is reliable at 95% probability level.

Table (3): Respondents commenting in case the effects of Rangelands transferring in creation or reduction Range manager land dispute with the other villagers before and after the Transferring

Description		after assignment of		Total
		Yes	No	
before assignment of	Yes	11 78.6%	17 22.1%	28 30.8%
	No	3 21.4%	60 77.9%	63 69.2%
Total		14 15.4%	77 84.6%	91 100%

$X^2 = 17/74$

The transferral of rangelands decreased social disputes. Ho: P= 0
The transferral of rangelands increased social disputes. H1: P# 0
Considering the above mentioned, transferring rangelands up to %15.4 has reduced the disputes. Accordingly, H_1 is rejected and H_0 is confirmed.

Investigation of the effectiveness of the transferral of rangelands in engendering or reducing the ownership disputes between the rancher and the villagers before and after the transferral.
According to the table and chart number (44), of 91 study projects, 78 ranchers equivalent to 85.7% of ranchers and livestock breeders stated that they had had no dispute over the ownership with other ranchers before the transferral while 13 ranchers equivalent to %14.3 of them stated that they had ownership disputes.

Also, 81 equivalent to 89 percent of ranchers and livestock breeders stated that they had had no dispute over the ownership with other ranchers after the transferral (I.e. the transferral reduced the ownership disputes between them up to 4.4 percent). But 10 ranchers equivalent to 11 percent of ranchers and livestock breeders still had disputes with the other ranchers. The comparison of X2 obtained from the table (3.84) with the calculated X2 (11.7) shows that the information obtained was not resulted by chance and is reliable at 95% probability level. This variable also shows that the first hypothesis is to be rejected.

Table (4): Respondents commenting in case the effects of Rangelands transferring in creation or reduction Range manager land dispute with Range managers the conventional organization before and after the Transferring

Description		after assignment of		Total
		Yes	No	
before assignment of	Yes	5 50%	8 9.9%	13 14.3%
	No	5 50%	73 90.1%	78 85.7%
Total		10 11%	81 89%	91 100%

X^2=11.7

Here so, H_1 is rejected and H_0 is confirmed.

The transferral reduced the ownership disputes between them up to 3.3 percent and 18 ranchers equivalent to 19.8 percent of ranchers and livestock breeders still had disputes with the other ranchers.

The comparison of X2 obtained from the table (3.84) with the calculated X2 (24.01) with free degree 1 and probability level %5 shows that the information obtained was reliable at 95% level. This variable also shows that the first hypothesis is to be rejected. So, H_1 is rejected and H_0 is confirmed

Table (5): Respondents commenting in case the effects of Rangelands transferring in creation or reduction Range manager land dispute with Range managers outside of the conventional organization before and after the Transferring

Description		after assignment of		Total
		Yes	No	
before assignment of	Yes	12 66.7%	9 12.3%	21 23.1%
	No	6 33.3%	64 87.7%	70 76.9%
Total		18 19.8%	73 80.2%	91 100%

X^2 = 24/**01**

Investigation of the effectiveness of the transferral of rangelands in engendering or reducing administrative problems related to the organization of transhumance affairs before and after the transferral

The cooperation of organizations and departments can be effective in improving the lives of ranchers to a great extent, and naturally, the more secure and well off their lives be, the more positive will be the impact on protective operations for the rangelands. According to the table 6, of 91 study projects, 48 ranchers equivalent to 52.7% of ranchers and livestock breeders stated that before the transferral, the Transhumance organization cooperated with them while 43 ranchers equivalent to 47.3 % of them stated that the Transhumance organization did not cooperate with them before the transfer.

Test of second hypothesis

Test of first hypothesis: Transferral of rangelands to livestock breeders has caused administrative tensions and problems.

The comparison of X2 obtained from the table with the calculated X2 with free degree 1 and reliable level %95 shows that information obtained was resulted by chance and was not unreliable. And therefore, we cannot state that the transferral has reduced administrative problems related to the organization.

Table (6): Respondents commenting in case the effects of Rangelands transferring in creation or reduction the administrative problems with the tribal affairs organization before and after the Transferring

Description		after assignment of		Total
		Yes	No	
before assignment of	Yes	8 50%	35 46.7%	43 47.3%
	No	8 50%	40 53.3%	48 52.7%
Total		16 17.6%	75 82.4%	91 100%

X^2=0/059

Test of third hypothesis

Third hypothesis: Transferral of rangelands has been effective in the process of quality improvement and in enhancement of the economic value of rangelands.

One of the criteria considered in economic evaluation is that of the ratio of benefit to cost, which is cost-effective in projects in which the ratio is greater than the unit. In this study, of 91 study projects, this ratio was greater than the unit in all 91 before and after the transferral of the rangelands, which shows their being cost-effective.

Table (7): survey of ratio benefit to cost of Rangelands before and after Transferring

Description		after assignment of		Total
		Yes	No	
before assignment of	Yes	90 98.9%	0	90 98.9%
	No	1 1.1%	0	1 1.1%
Total		91 100%	0	91 100%

Table X^2 = 3/84 Calculated X^2 = 56/39

The comparison of X2 obtained from the table with the calculated X2 with free degree 1 and reliable level %95 shows that information obtained is reliable and statistically significant and shows that the transferral leads to improved economic status of the rangeland owners. Thus, H_0 is rejected and H_1 is confirmed.

H1: P# 0 H_o: P= 0

= 3/84Table X^2

DISCUSSION AND CONCLUSION

According to information obtained from the calculations and investigation of the hypotheses and testing them through statistical methods, the variables influencing rangelands and also the impacts of the transferral as a new idea rangeland management in the recent decades was specified; in % 97.8 of cases, the excessive number of livestock has been an agent of rangeland degradation in form of excessive and premature grazing on rangelands, and this has caused a regressive trend in rangelands; This factor reduced by %27.5 after the transferral of the rangelands, and is indicative of the appropriate management of the projects.

Also, the present study shows that parameters such as government's lack of consideration of rangelands, villagers' uncontrolled exploitation of rangelands, disintegration of tribal systems, shrub cutting and grass cutting, not sharing out rangelands, not being cost-effective due to the rangeland's state of being commonly owned, and inefficiency of the management system of rangelands, before the transferral have caused the non-investment and inefficiency of the rangeland systems; after the transferral, due to scientific and economical management in the rangeland areas in form of range management projects such as sowing, water supply, exclusion and protection, delayed transhumance time and… minimize the abovementioned barriers, and this will be an effective pace in increasing production or increasing efficiency of rangeland management, economizing rangeland areas, and executing rehabilitation operations in the rangelands.

The obtained data indicate that the ownership disputes between the ranchers with the villagers have reduced by % 15.4 after transferral. Also, after transferral, the ownership disputes among the ranchers themselves have reduced by 4.4 percent; only % 11 of them have stated that the dispute ongoing. The next impact of rangeland transferral is the reduction of administrative problems related to Transhumance Organization and Department of Natural Resources. These problems have been reduced by %29.7. In other words, due to proper management of rangelands and determining the appropriate strategy for rangelands, the Transhumance Organization has improved its position in relation to the transhumant's and ranchers, and has been able to provide better services such as building access roads in the range management projects, transporting services such as fuel and ... in the form of range management projects.

The rate of cooperation has improved up to %29.7 more than before, and the relation has been reinforced more than ever between the Department of Natural Resources and the people up to % 35.1 because of their acceptance of the recommendations and their cooperation in natural resource management. There was no significant relationship between veterinary services and the rangeland projects, because even in case there be no rangeland the Veterinary Department is still required to provide veterinary services, and its activities are not limited to the rangeland projects. The income estimation shows that after the transferral, due to rangeland forage production and its effect on the ratio of forage conversion to meat, it shall play a major role in the economy of transhumant. For technical and economic reasons, sheep breeding is preferable to breeding other livestock; the livestock breeder, therefore, is encouraged to keep more sheep in the herd composition.

The outcome is that rangelands privatization projects have been very successful due to the resultant rate of production, protection, and rehabilitation, and due to the technically codified plans under the supervision of the executive organs and engendering the feeling of ownership and attachment toward the rangelands and a comprehensive attitude toward the all economic, social, and technical issues. Rangeland privatization will thus effect a motivation in rehabilitating the rangelands for the economic reinforcement of the beneficiary families.

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