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Collective Conservation of Farmlands through Community Agreement under Direct Payment Policy in Shimane Prefecture

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Abstract This paper examines the recent trend of collective conservation through community agreements under the direct payment policy in Shimane Prefecture. Using data on community agreements under the direct payment compensation policy in the third financial quarter, we examine the trend in the composition of community agreements by classifying such agreements into three types, and obtained the following results.

First, with regard to the changes in the collective conservation of farmlands, we confirmed a difference in the participation of farmers between broad-based agreements and other forms of agreement. On the other hand, there were little differences in the number of farmers, allocation rate of subsidies to the community, and participation of non-farmers in conservation areas. We also confirmed differences in participation of farmers, non-farmers, agricultural production organizations and corporations between large- and small-scale agreements. Second, with respect to the several types of collective promotion activities for community development, in non-integrated agreements initially formed with multiple communities, we confirmed positive changes in larger-scale agreements in terms of the selection rate of practising high-value-added agriculture and strengthening the condition of agricultural production. A proportion of the larger-scale integrated broad-based agreements were based on processing agricultural products and strengthening agricultural conditions. There was a positive change in broad-based agreements in terms of allocating farmlands to main bearers in the agricultural region and the practice of high-value-added agriculture. These results imply that it is important to manage larger-scale agreements to ensure conservation of farmlands in hilly and mountainous areas.

Keywords : Collective Conservation, Community Agreement, Direct Payment Policy, Farmlands, Hilly and Mountainous Areas, Recent Trend, Rural Community

Introduction

There has been great concern about conservation of farmlands in hilly and mountainous areas. In Japan, direct payment to less favoured areas has been conducted based on agreement, that is, the execution of collective conservation, among farmers in rural communities where there were few agricultural settlements. Collective conservation through direct payment compensation policy plays two roles, 'conservation of farmland by the rural community' and 'vitalizing the rural community trough agreement'(Hashiguchi 2011). In recent years, concerns have also been raised regarding broad-based conservation of farmlands through the integration of community agreements in hilly and mountainous areas. Until now, some studies such as Yamaura (2007), Takagishi and Hasizume (2010), Yonezawa and Takeuchi (2006), and Yasunaga (2016) have tried to capture the conservation patterns in terms of actual conditions and effects of broad-based agreements. However, few studies have been

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conducted to capture the recent trend in the pattern of community agreements under the direct payment policy in hilly and mountainous areas. In particular, there are few studies that clarify the change in activities that are a part of community agreements over the last five years, which is the minimum period for conservation of farmlands under a direct payment policy. Researching the above points is considered to be meaningful when considering conservation methods and policy for hilly and mountainous areas.

This paper examines the recent trend of community agreements in Shimane Prefecture in view of changes in areas covered and the targeted activities in community agreements.

Materials and Methods

Analytical Framework

Figure 1 shows the analytical framework used in this study. First, we capture changes such as the area covered by the agreement, allocation of subsidies, participants and so forth. Second, we clarify the changes in the selection of collective promotion activities, and the relationship between such changes and the scale of community conservation agreements. In particular, we set the hypothesis that there are characteristic differences between integrated broad-based community agreements and non-broad-based community agreements. We defined the three types of community agreements as follows: Type A as agreements that are integrated with other agreements from the second policy period; Type B as community agreements with multiple communities in the first policy period; Type C as other community agreements entered into within a single community. In addition, we also defined Type A and Type B as a broad-based community agreement, and Type B and Type C as a non-integrated community agreement. Based on the above definition, we set the hypothesis that broad-based agreements tend to have positive characteristics compared to other community agreements.

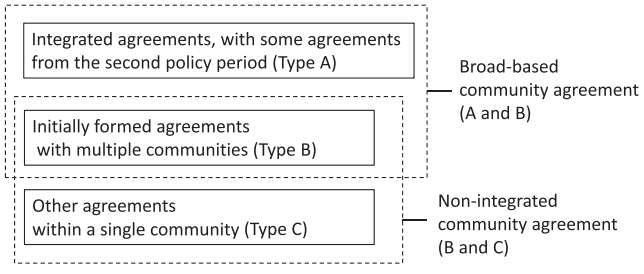

Fig. 1 Type of community agreement

Method of Investigation

As previously mentioned, we classified the community agreements into three types. To clarify the hypothesis, we compared the trend from FY2010 to FY2014, by calculating the average value and rate of each type of agreement in terms of the research items relating to direct payment in each indicator.

Data for Investigation

To capture the trend of collective conservation through community agreements, we use community agreement data of FY2010 and FY2014 obtained from Shimane Prefecture, which covers the first and final fiscal year of the third period of the direct payment policy. These data include the area covered by the community agreements, participants, targeted items of their production activities, allocation of subsidies, and so on. We focus on the community agreements that began at the beginning of the third policy period. Agreements that were entered into in the middle of the period were excluded.

Results and Discussion

Changes in Collective Conservation

Table 1 shows the changes in the content of the agreements in terms of the area of farmland under collective conservation and the rate to allocation of subsidies to the community. With regard to the size of the area covered by the agreement, there is a difference of more than 10ha between Type A integrated agreements and Type C non-integrated agreements. In general, over 50 percent of communities are allocated subsidies because the local government provides guidance regarding the use of subsidies. Allocation of subsidies increased in broad-based community agreements but decreased in non-broad-based community agreements.

Table 2 shows the changes in farmers' participation in agreements and size of farmland conservation area per farmer. An average of approximately twenty-six farmers participate in integrated agreements. This is significant difference from non-broad-based community agreements. On the other hand, in integrated agreements, farmers have more burdens for conservation than do farmers in non-integrated agreements. The participation of corporate and administrative persons increased in the third period, in all three types of agreement.

Table 1 Changes in conservation area and allocation of subsidies

	Farmland area covered by the agreement			Allocation rate of subsidies to the community		
	ha	ha	%	%	%	%
	FY2010	FY2014	Change rate	FY2010	FY2014	Point difference
Integrated agreements from second policy period (Type A)	19.3	19.5	2.1	56.3	57.9	1.6
Initially formed agreements with multiple communities (Type B)	11.9	12.1	1.8	58.2	60.4	2.2
Agreements entered into within a single community (Type C)	8.7	8.8	2.0	58.4	58.2	−0.2

Note1: Sample size of (A), (B), (C) are 56, 195, 1,006, respectively.
Note2: Figures were calculated as average values or percentages.
Note3: Single community indicates an agricultural settlement which is the minimum unit of a rural community.

Table 2 Participation in the community agreement

		Participation of farmers		Conservation area per farmers		Allocation rate of subsidies to the community		Participation of non-farmers		Participation rate of agricultural production organization		Participation rate of corporation (juridical person)	
		No. of persons		ha		%		No. of persons		%		%	
		FY2010	FY2014	FY2010	FY2014	FY2010	FY2014	FY2010	FY2014	FY2010	FY2014	FY2010	FY2014
Integrated agreements from second policy period (Type A)	Total (56)	26.5	26.1	0.8	0.8	56.3	57.9	1.5	1.5	16.1	17.9	25.0	28.6
	Over 10ha (34)	36.6	35.9	0.9	0.9	59.8	62.7	2.3	2.3	26.5	29.4	35.3	38.2
	Less than 10ha (22)	10.8	10.9	0.6	0.6	50.8	50.4	0.4	0.4	0.0	0.0	9.1	13.6
Initially formed agreements with multiple communities (Type B)	Total (195)	20.2	20.2	0.7	0.7	58.2	60.4	1.3	1.3	12.8	12.8	14.9	19.0
	Over 10ha (88)	28.4	29.0	0.9	0.8	57.6	57.4	1.7	1.7	17.0	17.0	26.1	31.8
	Less than 10ha (107)	13.4	12.9	0.5	0.5	58.6	62.8	1.0	1.0	9.3	9.3	5.6	8.4
Agreements entered into within a single community (Type C)	Total (1,006)	13.8	13.7	0.7	0.7	58.4	58.2	1.1	1.1	14.9	15.0	12.4	16.2
	Over 10ha (299)	21.2	21.1	1.0	0.9	61.3	61.6	1.6	1.7	24.4	26.1	25.4	29.4
	Less than 10ha (707)	10.7	10.5	0.5	0.5	57.1	56.8	0.9	0.9	10.9	10.3	6.9	10.6

Note1: Sample size is shown in parentheses.
Note2: Figures were calculated as average values per capita, or percentages.
Note3: Single community indicates an agricultural settlement which is the minimum unit of a rural community.

Relationship between the scale of agreement and the change in conservation form

Table 2 also shows the relationship between the size of conservation areas and collective activities through the agreement. We captured the agreement based on a standard conservation area over 10ha and the starting point of collective conservation because there are many rural communities that are less than 10ha in Shimane Prefecture.

More farmers participated in community agreements covering a conservation area of more than 10ha. In addition, the number of conservations areas has increased. The burden of conservation on their farmland has increased. There is no difference in the average values between the three types of agreement. Non-farmer participants were also involved in larger community agreements.

There was a trend for agricultural production organizations to participate in larger integrated community agreements. This trend has not been seen in the other non-integrated community agreements.

There was a relatively lower allocation rate of subsidies to communities that initially formed larger community agreements with multiple communities.

Relationship between the scale of agreement and the selection of collective promotion activities

Table 3 and Table 4 show the relationship between the scale of community agreements, the selection of collective activities and direct payment compensation policy (Requirement A) for future community development. We captured the trend of the choice of activities in the agreement, in particular, the relationship between the scale of the agreement and activity items.

Table 3 Relationship between the conservation area and selection of promotion activities for community development

unit: %

		Expanding conservation areas		Sharing agricultural machines		Practice of high-value-added agriculture		Processing and sales of agricultural products		Strengthen agricultural production conditions	
		FY2010	FY2014	FY2010	FY2014	FY2010	FY2014	FY2010	FY2014	FY2010	FY2014
Integrated agreements from second policy period (Type A)	Total (56)	5.4	3.6	17.9	17.9	5.4	5.4	7.1	7.1	3.6	3.6
	Over 10ha (34)	5.9	2.9	23.5	23.5	2.9	2.9	11.8	11.8	5.9	5.9
	Less than 10ha (22)	4.5	4.5	9.1	9.1	9.1	9.1	0.0	0.0	0.0	0.0
Initially formed agreements with multiple communities (Type B)	Total (195)	6.7	5.6	10.8	10.8	4.1	4.6	3.1	3.1	4.6	5.1
	Over 10ha (88)	5.7	4.5	6.8	8.0	6.8	8.0	4.5	4.5	5.7	6.8
	Less than 10ha (107)	7.5	6.5	14.0	13.1	1.9	1.9	1.9	1.9	3.7	3.7
Agreements entered into within a single community (Type C)	Total (1,006)	7.6	6.4	18.2	17.0	3.0	2.6	2.6	2.3	5.5	5.2
	Over 10ha (299)	8.7	6.7	24.1	23.1	3.3	2.7	3.7	3.3	6.4	6.4
	Less than 10ha (707)	7.1	6.2	15.7	14.4	2.8	2.5	2.1	1.8	5.1	4.7

Note1: Figures were calculated as average value per capita, or percentages.
Note2: Single community indicates an agricultural settlement which is the minimum unit of a rural community.

Table 4 Relationship between the conservation area and selection of promotion activities for community development (continued)

unit: %

		Securing new farmers in the area		Fostering the certified farmers in the area		Getting multiple participants on board		Allocation of farmlands to main bearers of agriculture		Entrusting the agricultural work to main bearers of agriculture	
		FY2010	FY2014	FY2010	FY2014	FY2010	FY2014	FY2010	FY2014	FY2010	FY2014
Integrated agreements from second policy period (Type A)	Total (56)	1.8	1.8	0.0	0.0	0.0	0.0	3.6	3.6	8.9	7.1
	Over 10ha (34)	2.9	2.9	0.0	0.0	0.0	0.0	2.9	2.9	11.8	8.8
	Less than 10ha (22)	0.0	0.0	0.0	0.0	0.0	0.0	4.5	4.5	4.5	4.5
Initially formed agreements with multiple communities (Type B)	Total (195)	1.5	1.0	2.1	1.5	0.5	0.5	1.0	1.5	3.6	4.1
	Over 10ha (88)	1.1	1.1	3.4	2.3	0.0	0.0	1.1	2.3	3.4	4.5
	Less than 10ha (107)	1.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	3.7	3.7
Agreements entered into within a single community (Type C)	Total (1,006)	0.9	0.9	0.9	0.8	0.4	0.3	2.2	1.9	6.3	6.1
	Over 10ha (299)	1.3	1.7	2.0	1.7	0.7	0.7	3.7	3.0	9.4	9.4
	Less than 10ha (707)	0.7	0.6	0.4	0.4	0.3	0.1	1.6	1.4	5.0	4.7

Note1: Figures were calculated as average value per capita, or percentages.
Note2: Single community indicates an agricultural settlement which is the minimum unit of a rural community.

According to Table 3, sharing agricultural machines is the most selected in Type A integrated agreements and in Type C non-integrated agreements. This accounts for over 20 percent of large-scale agreements. In addition, as a whole, when the scale of agreements became larger, there was a tendency for the selection ratio of each promotion activity to be high. The rate of selection for the practice of high-value-added agriculture increased in initially formed Type B agreements with multiple communities. This tendency was the same as strengthening the agricultural production conditions and assigning agricultural work to main bearers in the agricultural region.

There was a significant difference between large and small agreements in integrated broad-based community agreements in terms of processing and sales of agricultural products. High-value-added agriculture was selected more often in small integrated agreements than in large agreements. In initially formed agreements with multiple communities, practising high-value-added agriculture, processing and sales of agricultural products, and strengthening the agricultural production conditions also depended on the scale of agreement.

It is assumed that in large-scale integrated community agreements the processing of agricultural products was selected for the promotion of regional development. On the other hand, most community agreements did not select the activity of getting multiple participants on board. We assume that it was difficult to secure outside support from other areas in each agreement.

Relationship between the scale of agreement and results of collective promotion activities

Tables 5 and 6 represent the activity condition in view of actual results of changes in conservation areas and farmers who participate. In addition to the selection of target activities for future development, we examined the numerical changes of these activities by aggregating the samples.

Table 5 Activities for conservation and future community development

		Expanding conservation areas		Sharing agricultural machines		Practice of high-value-added agriculture		Processing and sales of agricultural products		Strengthen agricultural production conditions	
		ha		ha		ha		Not surveyed		ha	
		FY2010	FY2014	FY2010	FY2014	FY2010	FY2014	FY2010	FY2014	FY2010	FY2014
Integrated agreements from second policy period (Type A)	Total	13.2	12.5	9.6	10.0	6.5	5.3	−	−	−	6.9
	Over 10ha	16.9	19.0	10.1	11.4	12.0	13.4	−	−	−	6.9
	Less than 10ha	5.9	5.9	6.0	4.5	1.0	1.3	−	−	−	−
Initially formed agreements with multiple communities (Type B)	Total	11.8	9.9	4.6	6.3	4.2	6.6	−	−	12.4	4.6
	Over 10ha	18.5	14.5	9.0	11.6	5.0	7.8	−	−	12.4	6.4
	Less than 10ha	7.1	7.2	2.8	3.7	1.8	2.2	−	−	−	1.7
Agreements entered into within a single community (Type C)	Total	9.9	10.1	5.6	6.8	2.3	3.2	−	−	2.6	2.4
	Over 10ha	16.9	17.8	8.7	10.6	1.8	4.2	−	−	3.4	3.2
	Less than 10ha	6.5	6.5	3.3	4.3	2.5	2.9	−	−	2.1	2.0

Note1: Sample size of (A) is three in FY2010; two in FY2014. Sample of (B) is 12 in FY2010; 11 in FY2014. Sample size of (C) is 73 in FY2010; 63 in FY2014.
Note2: Figures, which are average values, were calculated based on the sample which has a positive value.
Note3: '−' indicates that average values could not be calculated because there was no sample.

Table 6 Activities for conservation and future community development (continued)

		Securing new farmers in the area		Encouraging certified farmers in the area		Getting multiple participants on board		Allocation of farmlands to main bearers of agriculture		Entrusting the agricultural work to main bearers of agriculture	
		No. of persons		No. of persons		ha		ha		ha	
		FY2010	FY2014	FY2010	FY2014	FY2010	FY2014	FY2010	FY2014	FY2010	FY2014
Integrated agreements from second policy period (Type A)	Total	−	2.0	−	−	−	−	2.8	11.2	11.8	8.0
	Over 10ha	−	2.0	−	−	−	−	−	19.3	16.3	9.7
	Less than 10ha	−	−	−	−	−	−	2.8	3.0	2.8	3.0
Initially formed agreements with multiple communities (Type B)	Total	−	1.0	1.0	1.0	−	4.1	5.5	11.1	3.9	4.8
	Over 10ha	−	1.0	1.0	1.0	−	−	7.7	14.3	5.6	7.3
	Less than 10ha	−	1.0	−	1.0	−	4.1	3.2	4.6	2.3	2.3
Agreements entered into within a single community (Type C)	Total	−	1.0	2.0	1.0	−	1.0	4.4	3.6	4.0	4.2
	Over 10ha	−	1.0	2.0	−	−	1.2	6.0	5.4	5.6	6.5
	Less than 10ha	−	1.0	−	1.0	−	0.6	2.2	2.0	2.3	2.4

Note1: Sample size of (A) is three in FY2010; two in FY2014. Sample of (B) is 12 in FY2010; 11 in FY2014. Sample size of (C) is 73 in FY2010; 63 in FY2014.
Note2: Figures, which are average values, were calculated based on the sample which has a positive value.
Note3: '−' indicates that average values could not be calculated because there was no sample.

As can be seen in Table 5, conservation areas in which agricultural machines were shared increased in all three types of agreement. On the other hand, practising high-value-added agriculture increased in Type B and Type C non-integrated agreements.

According to Table 6, the actual area conserved by getting multiple participants on board increased in Type B and Type C non-integrated agreements. Entrusting the agricultural work to main bearers in the agricultural region was also similar. Integration of farmlands continued in integrated broad-based community agreements.

It should be noted that the sample of these results was limited, especially in integrated broad-based community agreements. There remains a problem in that these answers are fewer compared to those for other research items.

Conclusion

This study clarified that there is a relationship between the size of conservation farmlands in each type of agreement and the changes in the content of the agreements. In particular, using the actual results under the direct payment compensation policy in hilly and mountainous areas, we captured the differences between broad-based community agreements and non-broad-based agreements and between integrated and non-integrated agreements.

The results of the investigation confirmed that there is a positive relationship between the size of conservation areas, and participation in agreements and collective promotion activities. In particular, there are differences in the selected and actual numerical results between large- and small-scale collective promotion activities in broad-based community agreements.

These results will be useful when considering methods of broad-based conservation and vitalization in hilly and mountainous areas. Although this study tried to capture collective conservation at the community agreement level, further analysis at the rural community level should be conducted in future research.

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