Chapter 29

Analysis of the Description of the Multifunctionality of Farmland in the Administrative Plans of Local Municipalities

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Abstract Farmland has various beneficial functions, such as flood control, water purification, and habitat provision, in addition to food production. These functions are highly compatible with green infrastructure, and the use of farmland as green infrastructure has been discussed in recent years. In order to utilize these functions of farmland, it is preferable to include their usefulness and utilization measures in administrative plans and link them to actual projects. In this research, we collected eight types of administrative plans from local governments across Japan that could be related to the multifunctionality of farmland and reviewed the extent to which they contain descriptions of the multifunctionality of farmland as basic information for promoting the utilization of the multifunctionality of farmland. As a result, we discovered that farmland's multifunctionality was incorporated into the plans of many municipalities. Municipalities with a certain population size and a high financial strength index, in particular, tended to mention the multifunctional role of farmland in their plans more frequently. In addition, we found that some of the functions were mentioned less frequently in the plans. While descriptions of "conservation of natural environment" and "landscape/culture formation and recreation" were common in many plans, descriptions of "disaster mitigation and response" and "water and food supply" in times of disaster were less common.

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Finally, we drew some recommendations that can be used as a reference for future planning and project promotion, including dissemination of knowledge and information of farmland's multifunctionality to government and citizens.

Keywords Multifunctionality · Farmland · Green infrastructure · Policy analysis · Administrative plan

29.1 Background and Goal of the Study

With the increasing risk of disasters due to climate change and decreasing opportunities for contact with nature due to urbanization, the multifunctionality of farmland is attracting attention. For example, farmlands can be utilized as evacuation sites and routes in the event of a disaster (Hara et al. 2016), and paddy fields can store water during floods while providing habitats for a variety of species (Kamda 2019; Osawa 2017). Farmlands also provide scenic, cultural, and recreational values through the formation of rural landscapes, providing opportunities to touch plants and soil for urban residents (see, e.g., Abler (2004), OECD (2001), Pretty (2004), and Van Huylenbroeck et al. (2007) for details of multifunctionality of farmland). This multifunctionality of farmlands has a high affinity with green infrastructure, which has become a growing concern in recent years in Japan. Moreover, the effectiveness of utilizing these functions of farmlands has been argued in a variety of settings (Ichinose 2015; Nishihiro et al. 2020).

While these diverse functions are highly beneficial to the public, they have not been sufficiently promoted due to the difficulty of converting them to market values. Therefore, to utilize these functions, support from the government is necessary. On that note, as a first step, it is important to mention the multifunctionality of farmland in administrative plans. This is because when it is included in the administrative plan, it becomes the basis for project proposals and budget requests, which will lead to the materialization of projects that will demonstrate the multiple functions of farmlands. For example, Yoshikawa et al. (2011) claimed that public support, including institutional development, is necessary for paddy fields to fulfill their flood mitigation function.

Some administrative plans of local governments already mentioned the multifunctionality of farmland, and it is meaningful to understand how it is referred to in such administrative plans to utilize these functions as green infrastructure. As for the studies on the description of the multifunctionality of farmland in local administrative plans, Aragane et al. (2017) reviewed the reference to the disaster prevention functions of urban “greenery” (not limited to farmland) in the Green Basic Plan, and the Ministry of Land, Infrastructure, Transport and Tourism (2018) also reviewed the description of green infrastructure in related administrative plans. However, there is no study focusing on the description of the multifunctionality of “farmland” in administrative plans of municipalities.

To obtain the basic information to promote the utilization of multifunctionality of farmland as green infrastructure, this study reviews eight kinds of administrative

plans in the fields of the natural environment, urban planning, land use, disaster prevention, and agriculture in 179 municipalities nationwide to ascertain which functions of farmland are mentioned in what plans. In addition, the tendency of the description is analyzed according to the characteristics of each municipality, which include population size, public finance, scale of agriculture, and flood risk.

29.2 Method

29.2.1 *Content Analysis*

In this study, analysis of textual information of administrative plans is attempted using the method of content analysis, which is a research method that systematically organizes and quantitatively analyzes textual information (see, e.g., Neuendorf (2001) for details of content analysis). This method has also been recently used in the analysis of environmental policies (e.g., Masuda 2017). Although the content analysis is intended to be as objective as possible, it should be noted that a certain degree of subjective judgment is included in this study since extracting references to the multifunctionality of farmland completely mechanically is difficult due to its complexity.

In the following, we outline the target municipalities and the administrative plans, the classification of the multiple functions of farmland, the criteria for determining the presence or absence of descriptions, and the viewpoint of analysis.

29.2.2 *Municipalities for Analysis*

To compare and analyze the information on the multifunctionality of farmland in administrative plans depending on the characteristics of each municipality, 179 municipalities in Japan were selected for this study. Since it is often difficult for small municipalities to formulate their own plans due to staffing and financial constraints, this study focused on municipalities with a certain population size: government-designated cities (20), special wards (21), core cities (58), and municipalities that do not belong to any of the above categories with a total population of 150,000 or more (80).

29.2.3 *Administrative Plans for Analysis*

To compare and analyze the mentioning of the multifunctionality of farmland among different kinds of administrative plans, this study reviewed eight kinds of

municipal administrative plans that are most likely to mention the multifunctionality of farmland from the perspectives of land use, agricultural promotion, environment, and disaster prevention. The plans were collected from the websites of each municipality. In cases where the main body of the plan was not published, the summary version of the plan was reviewed (the latest versions of plans were reviewed as of December 2018). In addition, the survey was focused on the main content of the plan such as measures, basic policies, and goals because those described in other sections such as the appendix information of the plan are less likely to be linked to the implementation of projects (the areas to be analyzed for each plan are shown in Table 29.1).

Table 29.1 Analytical administrative plans

No	Plan's name ^a	Foundational law ^a	Formulation ratio ^b	Reviewed contents
1	Green Master Plan (<i>Midori no Kihon Keikaku</i>)	Urban Green Space Conservation Act (<i>Toshi Ryokuchi Hou</i>)	91.1%	Basic concept/future vision, measures/programs
2	Basic Environment Plan (<i>Kankyo Kihon Keikaku</i>)	The Basic Environment Law (<i>Kankyo Kihon Hou</i>)	98.9%	Future vision, measures
3	Urban Master Plan (<i>Toshi Keikaku Masuta Puran</i>) ^c	City Planning Act (<i>Toshi Keikaku Hou</i>)	97.2%	Basic concept, basic policy
4	Regional Biodiversity Strategy (<i>Seibutsu Tayousei Chiiki Senryaku</i>)	Basic Act on Biodiversity (<i>Seibutsu Tayousei Kihon Hou</i>)	31.8%	Goals/philosophy, basic policy, measures
5	National Land Use Plan (<i>Kokudo Riyou Keikaku</i>)	National Land Use Planning Act (<i>Kokudo Riyou Keikaku Hou</i>)	10.1%	Basic policy/future vision, measures
6	Fundamental Plans for Regional Resilience (<i>Kokudo Kyoujinka Chiiki Keikaku</i>)	Basic Act for National Resilience (<i>Kokudo Kyoujinka Kihon Hou</i>)	19.6%	Basic concept, goals, required measures
7	Basic Plan for Urban Agriculture Promotion (<i>Toshi Nougyou Shinkou Kihon Keikaku</i>)	Basic Law on the Promotion of Urban Agriculture (<i>Toshi Nougyou Shinkou Kihon Hou</i>)	14.0%	Vulnerability assessment, basic policy, measures/programs
8	Agricultural Development Plan (<i>Nougyou Shinkou Keikaku</i>)	—	40.8%	Basic concept/policy, measures/programs

^aItalic letters indicate plans and laws in Japanese

^bFormulation ratio: Percentage of the 179 municipalities that have formulated the plan

^cOnly Urban Master Plan is mandatory

29.2.4 Organizing and Classifying the Multiple Functions of Farmland

To review what functions of farmland are referred to in the administrative plans of municipalities, the multiple functions of farmland are first classified. Regarding the classification, Article 3 of the Food, Agriculture and Rural Areas Basic Act explains that the “multiple roles that agriculture plays through stable production in rural areas include conservation of national land, water resources, natural environment, formation of good landscape, and respect for the cultural tradition in addition to its conventional role as a primary food supplier.” Based on the description in this law, this study classified the functions into “national land conservation and disaster prevention,” “conservation of natural environment,” “landscape/culture formation and recreation,” and “water sources conservation.” More detailed functions included in these categories were then classified based on the classification of the Science Council of Japan (2001).

Furthermore, from the perspective of farmland as infrastructure, functions were categorized into “functions in normal times” and “functions in times of disaster.” The details of each function and the examples of related words and terms are listed in Table 29.2.

29.2.5 Establishment of Criteria for the Reference to the Multifunctionality of Farmland in Administrative Plans

Descriptions related to the multifunctionality of farmland (including fields, rice paddies, valleys, and productive green lands) were extracted in administrative plans and were reviewed whether or not they are mentioned in each plan. The criteria for the presence of the descriptions are explained below.

Although it is ideal to have completely objective criteria, it is difficult to judge the presence of the descriptions by simply searching particular words or phrases. For example, with regard to the flood control function of farmland, simply extracting the word “flood control” does not allow us to determine whether it belongs to farmland. Also, “flood control” can be termed in various ways, such as “flood prevention,” “rainwater storage,” “storing water,” and “reducing the amount of water flowing into rivers.” Therefore, this study decided not to extract specific words or phrases but to read the texts based on certain rules and make qualitative judgments on whether there are references to the multifunctionality of farmland. The rules are as follows:

1. Only functions clearly stated as functions that the “farmland” (including paddy fields, fields, valleys, rice paddies, and production green spaces) performs are counted (descriptions about functions of “green spaces” or “open spaces” that include farmland but have a broader meaning are not counted).

Table 29.2 Categorization of the functions of farmlands

Categories		Functions	Examples of related phrases
Normal times	National land conservation and disaster prevention	<ul style="list-style-type: none"> • Flood control • Soil erosion prevention • Mitigation of heat island phenomenon 	<ul style="list-style-type: none"> • Flood prevention • Rainwater storage
	Conservation of natural environment	<ul style="list-style-type: none"> • Provision of habitats • Ecological network formation • Water purification • Organic waste decomposition • Air purification • Prevention of resource over-accumulation and deprivation • Carbon sequestration 	<ul style="list-style-type: none"> • Sustainable farming • Biodiversity conservation
	Landscape/culture formation and recreation	<ul style="list-style-type: none"> • Education and learning • Amenity • Landscape formation • Culture formation • Community building 	<ul style="list-style-type: none"> • Farming activity • Rural landscapes • Contact with greenery and soil • Agricultural tourism • Biological survey for education
In times of disaster	Water resources conservation	<ul style="list-style-type: none"> • Water resources conservation 	<ul style="list-style-type: none"> • Water source protection • Groundwater conservation
	Disaster mitigation and response	<ul style="list-style-type: none"> • Flood control • Evacuation site provision • Fire spread prevention 	<ul style="list-style-type: none"> • Flood plain • Securing evacuation routes
	Water and food supply	Food and water provision (for fire suppression and daily use)	<ul style="list-style-type: none"> • Fire suppression water

2. Regarding the disaster prevention function of farmland, descriptions related to preventing damage to the farmland itself are not counted.
3. General descriptions such as “multiple functions” that do not refer to specific functions (such as flood prevention) are not counted.

29.2.6 Analysis of Descriptions According to Municipal Characteristics

To analyze the differences in the reference to the multifunctionality of farmland according to municipal characteristics (socioeconomic status and natural environment status), the correlation coefficients between the reference to the multifunctionality in each plan and municipal characteristics were calculated. The

Table 29.3 List of attribute information of municipalities used in the analysis

Attribute info	Data	Data source
Population size	Population size	National census, Ministry of Internal Affairs and Communications (2015)
Public finance	Financial strength index	List of major financial indicators for local governments, Ministry of Internal Affairs and Communications (2016)
Scale of agriculture	Farmland acreage	Census of Agriculture and Forestry, Ministry of Agriculture, Forestry and Fisheries (2015)
Flood risk	Farmland acreage (ratio)	Census of Agriculture and Forestry, Ministry of Agriculture, Forestry and Fisheries (2015) and Area survey of prefectural cities, towns, and villages nationwide, Institute of Land and Geography (2016)
	Number of agricultural enterprises	
	Farmland abandonment rate	
	Flood affected area of residential area and others	Statistical survey on flood damage, Ministry of Land, Infrastructure, Transport and Tourism (aggregated the data from 2006 to 2016)
	Flood affected area of farmland	
	Total flood affected area	

Table 29.4 Categories according to population size and farmland acreage

<ul style="list-style-type: none">• Municipality type I: Population size and farmland acreage are above the average of the target municipalities• Municipality type II: Only the population size is above the average of the target municipalities• Municipality type III: Only the acreage of farmland is above the average of the target municipalities• Municipality type IV: Population size and farmland acreage are less than the average of the target municipalities

objective variable was the number of plans referring to the multifunctionality of farmland, and the explanatory variables were the population size and financial strength index as the socioeconomic conditions and the area of farmland, farmland ratio, abandoned farmland ratio, the number of agricultural enterprises, and acreage of the flooded area as the natural environmental conditions (Table 29.3).

A total of 179 municipalities were classified into the four categories (Table 29.4) according to population size and farmland acreage, and the number of plans with descriptions of multifunctionality for each category was counted to clarify the differences among the categories.

29.3 Results and Discussion

29.3.1 Description of the Multifunctionality of Farmland in each Administrative Plan

The result of the review process revealed that the description of the multifunctionality of farmland varied depending on the plan (Table 29.5). The three plans with a relatively high formulation ratio had a high percentage of descriptions of the categories of natural environment conservation, landscape/culture formation, and recreational functions of farmland, while the Fundamental Plans for Regional Resilience and the Basic Plan for Urban Agriculture Promotion, which exhibit low formulation ratios, had a high percentage of descriptions of all categories of multiple functions including disaster prevention. The following is a summary of the status of the description by each plan.

- In terms of Green Basic Plan, the Basic Environment Plan, and the Regional Biodiversity Strategy, many of them included descriptions of natural environment conservation and conservation of landscape and culture during normal times (more than 60%). On the other hand, only a few (less than 30%) mentioned disaster mitigation and response in times of disaster.
- Regarding Urban Master Plans, a high percentage of them mentioned natural environment conservation (58%) and landscape/culture formation and recreation

Table 29.5 Percentage of each kind of plan that refers to each category of farmland’s functions

Name of plans	Formulation ratio	Normal times				In times of disaster	
		National land conservation and disaster prevention	Conservation of natural environment	Landscape/ culture formation and recreation	Water resources conservation	Disaster mitigation and response	Water and food supply
Green Master Plan	91%	48%	64%	79%	15%	28%	0%
Basic Environment Plan	99%	34%	76%	73%	34%	5%	0%
Urban Master Plan	97%	44%	58%	91%	19%	50%	0%
Regional Biodiversity Strategy	32%	32%	95%	74%	18%	11%	0%
National Land Use Plan	10%	83%	83%	83%	61%	17%	0%
Fundamental Plans for Regional Resilience	20%	43%	17%	17%	14%	29%	20%
Urban Agricultural Promotion Basic Plan	14%	96%	100%	100%	36%	92%	12%
Agricultural Development Plan	41%	74%	93%	96%	66%	26%	4%

(91%) during normal times. Disaster mitigation and response in times of disaster were mentioned by 50%.

- In respect of National Land Use Plan, the percentage of descriptions of national land conservation and disaster prevention, natural environment conservation, landscape and culture formation and recreation, and water resource conservation during normal times was generally high (more than 60%). On the contrary, the percentage of descriptions of disaster mitigation and response in times of disaster was limited (17%).
- In the Fundamental Plans for Regional Resilience, the description of the multifunctionality of farmland was limited in both normal times and in times of disaster, but among them, disaster prevention and land conservation functions in normal times (43%) and disaster mitigation and response in times of disaster (29%) were relatively high.
- In terms of the Basic Plan for Urban Agriculture Promotion, every plan has descriptions of national land conservation and disaster prevention, conservation of natural environment, and landscape/culture formulation and recreation during normal times. In addition, a high percentage (92%) of the plans described disaster mitigation and response in times of disaster.
- In the Agricultural Development Plan, the percentage of descriptions of land conservation and disaster prevention, natural environment conservation, landscape/culture formulation and recreation, and water resource conservation during normal times was generally high (more than 60%).

Results showed that only 2% of the municipalities covered all the functions, and disaster mitigation and response and water and food supply functions in times of disaster, in particular, tended not to be mentioned.

The rate of municipalities that did not mention the disaster prevention function of farmland in any of their plans for disaster prevention was 19.8% and 36.8% in normal times and in times of disaster, respectively. This indicates that at least some municipalities may not even recognize farmland's disaster prevention and mitigation functions.

29.3.2 Tendency of the Description of the Multifunctionality of Farmland According to the Characteristics of Municipalities

The number of plans that refer to the multifunctionality of farmland had a positive correlation with the population, the financial strength index, and the number of agricultural enterprises. Meanwhile, the number of plans had a negative correlation with the farmland abandonment rate (Table 29.6). The absolute values of the correlation coefficients for Green Master Plans, Environmental Master Plans, and

Table 29.6 Correlation coefficients between the number of plans describing the multifunctionality of farmland and municipal attribute values (eight plans)

Name of plans	Normal times				In times of disaster		Total
	National land conservation and disaster prevention	Conservation of natural environment	Landscape/culture formation and recreation	Water resources conservation	Disaster mitigation and response	Water and food supply	
Population size	0.314	0.347	0.270	0.192	0.260	0.172	0.354
Financial index	0.267	0.265	0.259	0.109	0.330	0.054	0.309
Farmland acreage	0.118	0.106	0.086	0.288	-0.240	0.122	0.097
Farmland acreage (ratio)	0.080	0.114	0.062	0.207	-0.118	0.052	0.089
Number of agricultural enterprises	-0.220	-0.287	-0.329	-0.144	-0.235	-0.114	-0.312
Farmland abandonment rate	0.274	0.234	0.219	0.402	-0.196	0.038	0.237
Flood affected area of residential area and others	0.246	0.114	0.112	0.065	0.009	0.030	0.143
Flood affected area of farmland	0.119	0.067	0.065	0.305	-0.061	-0.051	0.113
Total flood affected area	0.249	0.124	0.121	0.250	-0.035	-0.014	0.174

*Orange cell indicates a correlation coefficient of 0.2 or higher, light blue cell indicates a correlation coefficient of -0.2 or lower, red font indicates a negative correlation coefficient

Urban Master Plans were similar (Tables 29.7, 29.8, and 29.9, respectively), although the absolute value of the correlation coefficients was smaller.

The results suggest that population size, financial strength, and farmland status are indicators of how well an administrative plan is written and formulated. On the other hand, the scale of floods has little impact on the description of farmland multifunctionality in the administrative plan, suggesting that there are some municipalities with many disasters but limited efforts in promoting the utilization of farmland as disaster prevention and mitigation measures.

29.3.3 *Number of Plans with Descriptions with Respect to Population Size and Farmland Acreage*

Figure 29.1 shows the differences in descriptions of the multifunctionality of farmlands by municipality type. Municipality type I, where both population size and farmland acreage are above average, had the highest number of plans mentioning all functions. In Municipality type II, where only the population size was above average, the natural environment and landscape/culture formation and recreation were described most frequently. In Municipality type III, which is above average

Table 29.7 Correlation coefficients between the number of plans describing the multifunctionality of farmland and municipal attribute values (Green Master Plan)

Name of plans	Normal times				In times of disaster		Total
	National land conservation and disaster prevention	Conservation of natural environment	Landscape/ culture formation and recreation	Water resources conservation	Disaster mitigation and response	Water and food supply	
Population size	0.142	0.228	0.182	0.209	0.032	-	0.220
Financial index	0.261	0.236	0.196	0.123	0.211	-	0.294
Farmland acreage	-0.075	-0.027	-0.001	-0.065	-0.112	-	-0.078
Farmland acreage (ratio)	0.015	0.129	0.030	-0.019	0.025	-	0.056
Number of agricultural enterprises	-0.179	-0.266	-0.337	-0.095	-0.155	-	-0.296
Farmland abandonment rate	0.048	0.010	0.068	-0.033	-0.085	-	0.007
Flood affected area of residential area and others	0.115	0.048	-0.003	-0.070	-0.037	-	0.025
Flood affected area of farmland	-0.050	0.001	-0.023	0.010	-0.056	-	-0.035
Total flood affected area	0.045	0.034	-0.018	-0.041	-0.063	-	-0.007

*Orange cell indicates a correlation coefficient of 0.2 or higher, light blue cell indicates a correlation coefficient of -0.2 or lower, red font indicates a negative correlation coefficient

Table 29.8 Correlation coefficients between the number of plans describing the multifunctionality of farmland and municipal attribute values (Basic Environmental Plan)

Name of plans	Normal times				In times of disaster		Total
	National land conservation and disaster prevention	Conservation of natural environment	Landscape/ culture formation and recreation	Water resources conservation	Disaster mitigation and response	Water and food supply	
Population size	0.057	-0.004	0.011	-0.029	-0.044	-	0.005
Financial index	0.165	0.129	0.183	0.042	0.121	-	0.196
Farmland acreage	0.021	0.154	0.062	0.186	-0.030	-	0.141
Farmland acreage (ratio)	0.054	0.167	0.160	0.155	0.085	-	0.198
Number of agricultural enterprises	-0.069	-0.167	-0.276	-0.019	-0.053	-	-0.186
Farmland abandonment rate	0.168	0.316	0.159	0.352	0.024	-	0.343
Flood affected area of residential area and others	0.020	0.116	0.047	0.161	-0.001	-	0.117
Flood affected area of farmland	0.079	0.121	0.034	0.175	-0.041	-	0.133
Total flood affected area	0.067	0.161	0.055	0.228	-0.029	-	0.170

*Orange cell indicates a correlation coefficient of 0.2 or higher, light blue cell indicates a correlation coefficient of -0.2 or lower, red font indicates a negative correlation coefficient

Table 29.9 Correlation coefficients between the number of plans describing the multifunctionality of farmland and municipal attribute values (Urban Master Plan)

Name of plans	Normal times				In times of disaster		Total
	National land conservation and disaster prevention	Conservation of natural environment	Landscape/culture formation and recreation	Water resources conservation	Disaster mitigation and response	Water and food supply	
Population size	-0.009	0.146	0.012	0.180	0.071	-	0.128
Financial index	0.053	0.051	0.074	0.019	0.161	-	0.118
Farmland acreage	0.167	0.042	0.120	0.216	-0.236	-	0.078
Farmland acreage (ratio)	0.127	0.052	0.115	0.110	-0.203	-	0.048
Number of agricultural enterprises	-0.125	-0.145	-0.290	-0.131	-0.190	-	-0.269
Farmland abandonment rate	0.243	0.020	0.201	0.216	-0.223	-	0.120
Flood affected area of residential area and others	0.132	0.078	0.040	-0.024	-0.091	-	0.045
Flood affected area of farmland	0.057	-0.063	-0.026	0.224	0.003	-	0.056
Total flood affected area	0.129	0.012	0.011	0.134	-0.060	-	0.069

*Orange cell indicates a correlation coefficient of 0.2 or higher, light blue cell indicates a correlation coefficient of -0.2 or lower, red font indicates a negative correlation coefficient

Fig. 29.1 Number of plans that describe the multifunctionality of farmland (by category, based on population size and farmland area)

only in terms of farmland acreage, the number of plans with descriptions of multifunctionality was larger than in Municipality II in terms of water resource conservation, but lower than in Municipality II in all other functions. Municipality type IV, where both population size and farmland acreage are below average, surpassed Municipality type III in disaster mitigation and response in times of disaster but was below the other municipality types in the other functions. In terms of the functions during a disaster, all municipalities had limited descriptions compared to normal times.

29.4 Conclusion: Issues and Future Directions of Green Infrastructure Policies for Farmland

Results of this study reveal that the multifunctionality of farmland has been mentioned in the plans of many municipalities in the fields of natural environment, urban planning, and agriculture. In particular, municipalities with a certain population size and financial strength tended to mention the multifunctionality of farmland more in their plans. However, some functions tended not to be referred to in the plans, especially in the area of “national land conservation and disaster prevention.”

The results of this study indicate that the following four approaches may be effective in promoting measures to utilize farmland as green infrastructure.

1. With regard to the Basic Environment Plan, the Green Master Plan, and the Urban Master Plan, the rate of plan formulation is high, but there is currently little mention of the national land conservation and disaster prevention functions of farmland. Therefore, in the process of reviewing and revising these plans, it would be effective to inform local governments of the importance of the national land conservation and disaster prevention functions of farmland and to include this point in the plans, which will consequently lead to the implementation of the measures.
2. Although only a few municipalities have formulated the National Land Use Plan, the Basic Plan for Urban Agriculture Promotion, and the Agricultural Development Plan, these plans tend to refer to the multifunctionality of farmland. The formulation of these plans could lead to projects that promote the utilization of the multifunctionality of farmland since the formulation of the plans is often with the description of multifunctionality, which could be a basis to promote the activities. Therefore, it may be effective to promote the formulation of the plan, and it is desirable to promote appropriate support from the national and prefectural governments for municipalities with limited human resources and budgets.
3. As for municipalities at high risk of flooding, the percentage of those that currently include the use of farmland for disaster reduction in their plans is not higher than other municipalities, but the potential need for disaster reduction is considered to be high. Therefore, it would be effective to make the effectiveness

of the disaster reduction function of farmland known to the local government and public so that it can be written in the plan and specific measures can be promoted.

4. For municipalities with a large farmland size and a small population (Category III), there were few plans that mentioned the multifunctionality of farmland despite its high potential for utilization. For these areas, it would be effective to specifically consider how to utilize the multifunctional functions of farmland and describe them in the plans to materialize them.

This study comprehensively reviewed the descriptions of the multifunctionality of farmland in the administrative plans of local governments and derived suggestions for utilizing the multifunctionality of farmland in the future.

In this analysis, only the presence or absence of mentions was identified based on certain rules, and there was no research on how the multifunctionality of farmland was described or what kind of descriptions will more likely lead to effective measures. In addition, while this study investigated the status of the description of the multifunctionality of farmland in administrative plans, it did not delve deeply into why the description in the plans has not progressed in the first place or why the formulation of plans that facilitate the description itself has not progressed. Furthermore, while this research focused on the multifunctionality of farmland, it is important to understand and analyze descriptions of the multifunctionality of other land uses and ecosystems, such as forests and parks. We believe that further research on these issues will lead to the formulation of more effective administrative plans for utilizing the multifunctionality of farmland and other green spaces.

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