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The Changing Social Structure and Function of the *Tochikairyoku* in Japan: A Case Study of the Iwate Chubu *Tochikairyoku*

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The purpose of this paper is to report on the changing social structure and function of the *Tochikairyoku* (Land Improvement Associations) in Kitakami, Iwate Prefecture, located in North East Japan. This case study was conducted by interviewing executive members of the Iwate Chubu *Tochikairyoku* and the farming membership working the land and by collecting and examining all available data pertaining to the changes affecting the functioning of this organization. The *Tochikairyoku* is a non-profit public organization of and for farmers engaged in agriculture or animal husbandry and serves to liaise between farmers and central and local governments. All the costs of management and staff are borne by the members. All decisions to be undertaken must be ratified by the members. The results of the case study indicate that there has been a significant consolidation in the number of *Tochikairyoku* and farms owing to the dwindling rural population and the ageing of those actively farming the land. Another major factor has been the recent changes in the Japanese Government's policy that now favours bigger agricultural units over smaller farmers. The *Tochikairyoku* are instrumental in promoting the new government policies by maintaining irrigation infrastructure and improving the quality of arable land in order to encourage the leasing of land from the smaller farmers to the bigger farm units. The new 2018 Law has effected changes in the election of executive members of the *Tochikairyoku* to include representatives of agribusiness interests and has introduced a reform of the *Tochikairyoku*'s accounting practices to make them more transparent.

Keywords: *Tochikairyoku* (Land Improvement Associations), Land Improvement Legislation, Irrigation Systems, Raising Land Use Efficiency, Consolidation of *Tochikairyoku*.

INTRODUCTION

Rice production has always constituted the central pillar of Japanese agriculture. The high quality of Japanese rice has depended on the construction and maintenance of an extensive irrigation infrastructure while the continuous improvement of land use and rice productivity has been made possible by the application of high levels of technological innovation. The sophistication of Japanese agriculture, not only concerning its technological aspects but also the social framework of the agricultural system itself is peculiar to Japan and has so far proved to be a unique model in Asia. The purpose of this paper is to investigate how this efficient mode of agricultural production came into being and how its function has changed over the years, especially today in light of recent changes to the legal framework governing the organization of the rural economy and society.

Historical background of Water Use in Agricultural Society

Agricultural society from the late 16th to the middle of the 19th century under the rule of the Shogunate and the regional han (clans) was marked by unending conflicts over natural resources, especially water, essential to rice production and forest land which provided fuel. Conflicting claims over the rights to river access and the distribution of water gave rise to disparities which characterized the typical causes of friction between competing groups. The central control of the Shogunate was far from absolute given the unmanageable topology of Japan's many small rivers and the complexity of the regional social structure consisting of many competing groups. During this long period there gradually arose two social formations with the purpose of regulating the use of water: the *yosukumiai* (water-use associations) organized on a village basis and the *yosukanko* (water distribution commons) which developed into a system for avoiding disputes between villages over water shares. The *yosukumiai* were managed by the *sodai* (representatives) elected from the member villages. The *Sodai* were responsible for the operation of the *yosukanko* system. This organization and its function of regulating water distribution has continued over centuries even into modern times. This traditional system was finally codified into a legal framework by the Meiji government.

With the advent of the Meiji government the private ownership of land was recognized and in 1873 land reforms were introduced under the name of *chisokaiseijorei* (land reform revision regulations). In 1890 the *suirikumiaijorei* (Water Users' Association regulations) came into force which stipulated that the owners of land were obliged to carry a portion of the costs for access to water and for managing the irrigation of agricultural land. In 1896 the *kasenho* (Riverine Laws) were established in order to give the public access to water under the aegis of the central government. For the first time in the history of the country Japan now enjoyed a modern European-style irrigation system. In 1899 the *Kochiseiriho* (Arable Land Reclamation statutes) gave individual landowners and big farmers the legal right to make improvements to their lands. The 1908 *Suirikumiaiho* (Water service union laws) were amended in 1909 to give only a legally constituted *Kochiseirikumiai* (Arable land reclamation union) the right to make improvements to the land. The *Kasenho* (Riverine Laws) established that permission to undertake any river works had to be obtained from the governor of the prefecture or from the central government which meant that the *Kankosuiriken* (tradition-based water rights) now became codified into a legal framework. This series of Meiji Era laws illustrates the complex history that lies behind the modern Japanese agricultural irrigation system.

Tochikairyoku (Land Improvement Associations)

Legislation (No 94-6) giving prefectural (regional) governments and *Tochikairyoku* the right to manage all properties (excluding private land rights) pertaining to land improvement was first introduced by the Minister of Agriculture, Forest and Fisheries in 1949. This legislation underwent major amendment (No 43) in 2018.

The purpose of the legislation was to enhance agricultural productivity by creating the necessary infrastructure centered around irrigation to support the improvement of land use, agricultural efficiency, the extension of farming acreage and the maintenance of land conservation. *Tochikairyoku* were established on the basis of the 1949 legislation. Today there are fewer than 6,000, a significant reduction from the more than 10,000 in the past.

In Iwate Prefecture there were 44 *Tochikairyoku* (2017) which together with 33 municipalities are managed by an all-prefectural ruling body (*ken-rengokai*). All the latter are connected to the umbrella organization, the *Zenkoku-rengokai* (all-Japan ruling body). The *Tochikairyoku* is a non-profit public organization of and for farmers engaged in agriculture or animal husbandry and serves as an entity that liaises between the farmers and central and local government. All the costs of management and staff are borne by the members. All decisions to be undertaken must be ratified by the members.

Figure 1. shows the sharp reduction in the number of *Tochikairyoku* in Iwate Prefecture from 1964 to 2018. The number fell further to 30 in 2018.

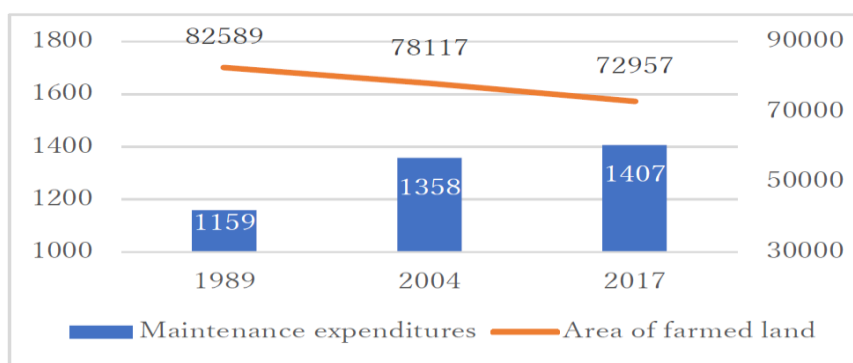


Figure 1. Reduction in the number of *Tochikairyoku*

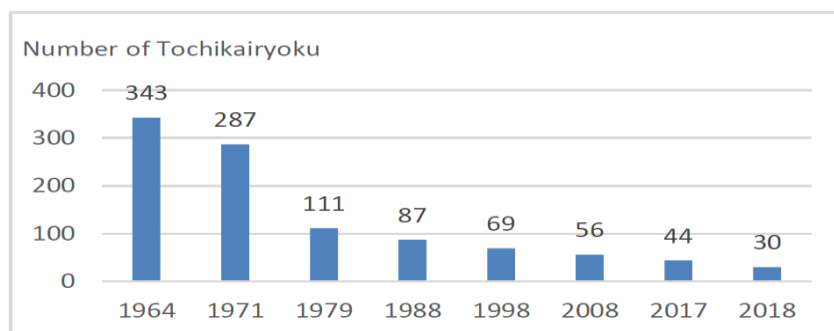


Figure 2. Rising of maintenance expenditures and declining of farmed land

Figure 2. shows that from 1975 to 2016 the number of hectares of farmed land under the management of

the *Tochikairyoku* has been steadily declining while maintenance expenditures have been steadily rising.

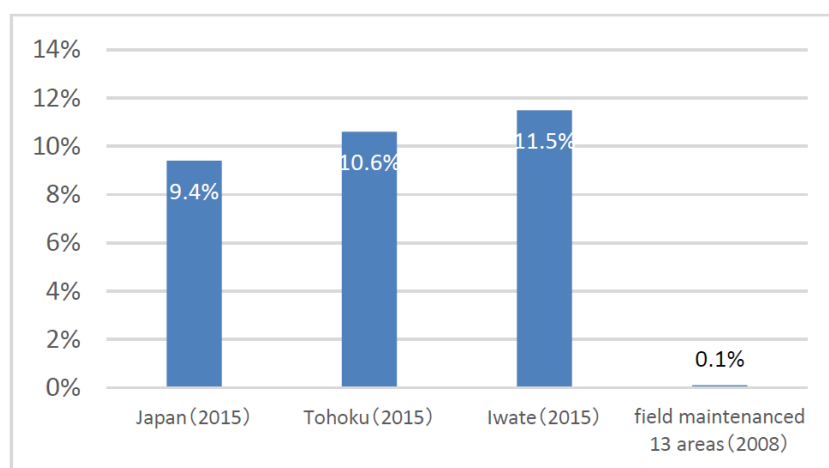


Figure 3. Percentage of abandoned farmland

Figure 3. shows how the percentage of abandoned farmland has fallen in tandem with the higher rate of investment in land improvement. Figure 3. also shows that the percentage of abandoned farmland in Iwate is higher than the national average and even that of the Tohoku area. In order to deal with the steady loss of farmed land the policy of Iwate Prefecture is now to concentrate on both restoring and reusing the abandoned land as well as ensuring that there are adequate supplies of water to maintain and improve the efficiency of land use.

The falling number of *Tochikairyoku* reflects both the decline in the number of farmers and the aging of the farming population as well as the rising maintenance costs of farming which have necessitated the amalgamation of many *Tochikairyoku* branches. Much of the rise in maintenance costs is because of the deterioration of the irrigation system, especially the water supply pipes that were laid as far back as 1955 and which now must be replaced.

A case study of the Iwate Chubu *Tochikairyoku* in Kitakami

This case study covers the period between July 2018 and July 2019 and was based on interviews with members and staff of the Iwate Chubu *Tochikairyoku*.

Kitakami City, the 9th largest of the 34 administrative regions of Iwate Prefecture, lies inland located in the south west of the prefecture. Surrounded by rice-growing rural communities, Kitakami is a small urban area with a population of around 90,000, 40% of whom work in industry, 50% in commerce and only 10% in agriculture. Since the 1960s Kitakami has grown, so that with its 250 companies it now hosts the largest industrial park in Iwate Prefecture. This industrial development has come at the cost of neglecting the formerly strong agricultural sector, so consequently agriculture in the Kitakami area has lost its competitive edge relative to other rural communities in Iwate.

The Kitakami area comprises 43,755 ha, of which 9,150ha is arable land (20% of total area). Rice paddies comprise 8,430ha (92.1% of total arable land). While the urban part comprises 40% of the Kitakami area, the agricultural districts comprise 50%. There are 237 villages spread among 5 areas divided into 13 districts. The main rice-producing areas are the southern and western parts.

There are three *Tochikairyoku* organizations in the Kitakami area, the largest being the Iwate Chubu *Tochikairyoku* .70-80% of which comprises land belonging to Kitakami.

Iwate Chubu *Tochikairyoku* today is a 2008 amalgamation of 5 previous organizations (Table 1). The first *Tochikairyoku* was founded in 1951 under the name of Waga Chuo Kairyoku in Waga Town which was later incorporated into Kitakami City. The beginnings of this organization go back to before WW2 when there was a union of local landlords and some independent farmers for the purpose of developing land for cultivation. It is interesting to note that the first reservoir in this area to supply water to new farmland for rice production was constructed in 1691.

Figure 4. shows the area of Iwate Chubu *Tochikairyoku* comprising 10,537ha (2018) includes parts of 3 municipalities: Kitakami, Hanamaki, Kanagasaki. There are 7,508 members of whom 98 are elected representatives; 22 of the latter hold executive positions, 19 as board members including the chairman and 3 as auditors. The board members are chosen from 32 chiku(district committees). In addition, there are 29 staff members belonging to 3 sections: accounting and general affairs, fee collection, and project management respectively. Ten years previously there had been 8,236 members owning 10,699ha, that is to say 162ha more farmland than in 2018. The main reasons for the shrinking farmland are the selling off of land for industrial

purposes and housing. In such cases the farmers are obliged to continue paying their membership fees to the *Tochikairyoku* for 10 years.

Table 1. Condition of Iwate Chubu Tochikairyoku

Previous organizations	Area	Main water source	Terminal facility	Field maintenance rate*
Organization no.1	3,972ha	Ishibane dam	Pipeline 80% Open channel 20%	79.6%
Organization no.2	4222 ha	Yuda dam etc	Pipeline 70% Open channel 30%	79.3%
Organization no.3	1777 ha	Senganishi reservoir and kitakamigawa river	Pipeline 25% Open channel 75%	32.1%
Organization no.4	323 ha	Sarugaishi power station and kitakami river	Pipeline 100%	61.0%
Organization no.5	288 ha	Getougawa river	Open channel 100%	-
Total	10,537ha	-	-	68.7%

*field maintenance rate: more than 30a

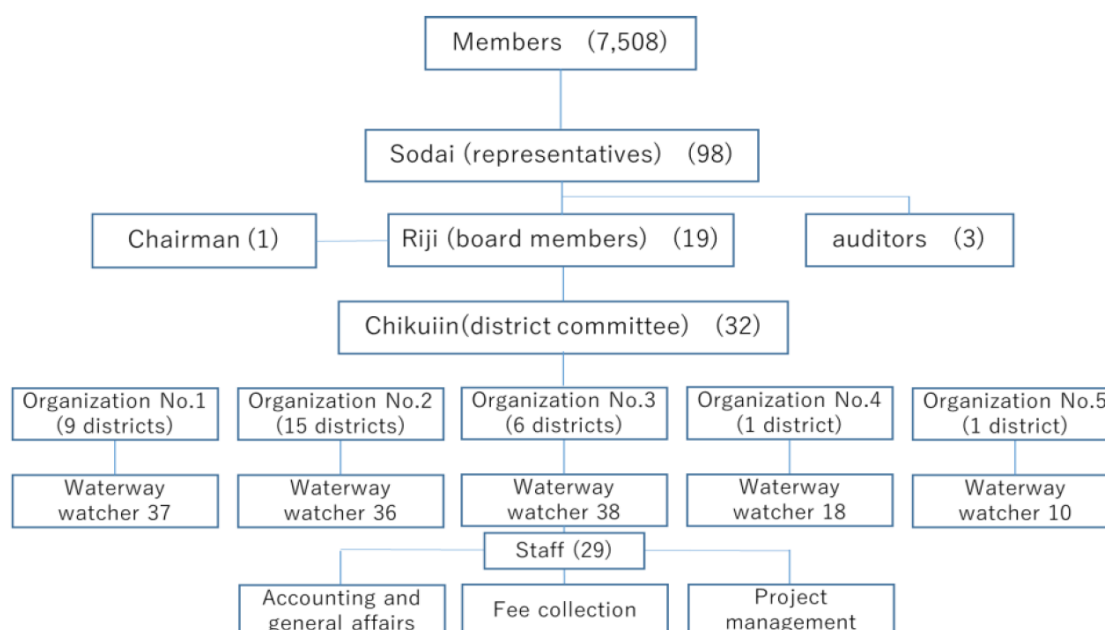


Figure 4. Organization chart of Iwate Chubu Tochikairyoku

These membership fees are used for 3 purposes:

1. to finance the management of the *Tochikairyoku* (¥2,300 per 10a);
2. to maintain and the infrastructure (¥3,000 – ¥18,000 per 10a);
3. to pay off long-term bank loans (20-30 years) used to finance new infrastructure; 90% of the costs are paid for by the central and prefectural and local governments and only 10% by the farmers themselves. Financing major infrastructure projects is the responsibility of the government. The *Tochikairyoku* function as a mediating organ between farmers and government when requesting government support to meet the various needs of farmers. After the annual session of the 32 district committees the requests of their members are conveyed to the Board for consideration. The *Tochikairyoku* has to negotiate with the prefectural or central government for its water supply taken from the rivers.

The 98 representatives receive ¥60,000, the 19 board members and auditors ¥550,000 as their annual remuneration which comes out of the membership fees. The biggest infrastructure projects are financed by the central government (50% or higher) with the prefecture bearing the rest of the cost but charging the municipalities 6%, while the latter pay 10% for the projects financed by the prefectures. In the case of small projects the *Tochikairyoku* and the membership are responsible for the costs incurred but with the help of subsidies (50%) from

the central government. However, nowadays the latter case has become rare.

The maintenance work consists of the following:

1. Keeping the water pipes clear of anything that impedes the smooth supply of water. Keeping the water pipes free from grass and undergrowth that interfere with maintenance. Snow removal around the pipes.
2. The regular adjustment of water distribution.
3. Cooperation with the prefecture in the creation and upkeep of rice paddies.
4. All work connected with culvert drainage.

Changes to the *Tochikairyoku* legislation

In 2018 the *Tochikairyoku* legislation was amended when the new law No 43 took effect. The government deemed it necessary to review the land system in order to put emphasis on the agribusiness aspect of farming which it was eager to support in order to promote a more favourable environment for farmers to increase their incomes and improve the management of the agriculture business. The fact that 40% of farmers now rent their land means that they have become an important new factor in the rural economy and they had to be given a more prominent role in the decision-making process. Hitherto only the owners of land were charged for a part of the land improvement costs, but given the increasing percentage of renters it may be that in future the latter group too will be required to shoulder at least some of the maintenance costs since the major infrastructure projects are already in place. The legislative reforms arose from the changing composition of the Japanese farming community which is characterized by the shrinking number of *Tochikairyoku*, the decline in the number of land-owning farmers, the ageing of the rural population and a significant increase in the number of agriculturalists renting land who are expected to play an ever more important role in the future management of the *Tochikairyoku*. The government designed the new legislation to introduce two major changes.

First, the election system to choose members of the *Tochikairyoku* was changed so that even non-farming landowners or farmers who rent land may now join the organization with the expectation that they will be able to play a role in shaping the future of the *Tochikairyoku*. This new membership will now be eligible to stand for election as regional representatives (*Sodai*). However, under the new law two thirds of the elected *sodai* must be active farmers. It is further envisaged that because of financial problems the number of the *riji* (board members) and *sodai* must be reduced in order to cut costs.

Second, in order to make the growing complexity of the *Tochikairyoku*'s finances more open and transparent it was proposed that the old Single Entry Accounting system be changed to a Double Entry Accounting system. This new accounting system is designed to make more detailed data available in order to do the necessary financial planning for the future replacement of ageing infrastructure.

As far as the Iwate Chubu *Tochikairyoku* is concerned these legislative changes have not yet affected the composition of the organization whose members are still only local farmers, but the new election rules will be applied to the next election cycle while the new Double Entry Accounting system is being introduced gradually since its complexity requires more time for its full implementation.

CONCLUSIONS

1. With the post-war land reforms came the social reorganization of Japanese rural communities whereby the *Tochikairyoku* became the leading body for dealing with the task of building a modern irrigation system and improving the land for the more efficient production of rice. Already starting in the Meiji Period the central government, building on centuries of custom regulating rural life in Japan, undertook measures to create a legal framework that made the financial resources and guidance of government essential to the establishment of a modern agricultural society.

2. The first priority for the *Tochikairyoku* was to lay down a new extensive irrigation infrastructure and oversee land improvement to expand the land areas suitable for increased rice production. However, this program eventually led to the overproduction of rice which then necessitated a change of policy around 1970 when farmers were instructed to switch to multi-functional land use in order to diversify their agricultural product and reduce rice farming.

3. Government investment in an extensive irrigation infrastructure has now made the multi-functional use of agricultural land possible, such as animal husbandry and even tourism which is becoming ever more important for the rural economy. However, the economics of maintaining this infrastructure means that the burden of costs must be borne mainly by the central government and yet the decline in the number of active farmers is contributing to the problem that many individual farmers are experiencing difficulties in meeting their financial obligations. This explains why the *Tochikairyoku* network has been forced to consolidate thus reducing their number and staff to reduce running costs. The accelerating decline and ageing of the rural population is forcing rural communities to collaborate more and share the work of managing and maintaining the functionality of rural society while the *Tochikairyoku* themselves are becoming hard pressed to find members able to carry out the tasks and duties

required to keep these organizations viable.

4. The new *Tochikairyoku* legislation now favours the interests of the bigger farmers and is thus accelerating the trend of agricultural land concentration into fewer hands whereas the post-war land reforms were actually designed to favour the interests of Japan's small farmers.

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