

## CHAPTER 3

### III LAND CONVERSION PROCESS IN THE RURAL-URBAN FRINGE OF MAEBASHI CITY

The sample area of Rokku is illustrated in Figure 7. Rokku is situated about three kilometers south south-east of the CBD. This area was one of the most active in terms of land-use change, indicated by a count of the number of grid points (> 15) identifying change in the Rokku area (see Figure 3). Such activity in the inner fringe makes Rokku a suitable area for investigating the relationship between land-transaction and land-use change. The boundary designating land controlled for urbanization effectively divides Rokku into two areas. The area designated for urbanization contained many urban-oriented facilities such as, a garbage disposal factory, large-scale warehouses and gas tanks that were in existence before 1980, which is the starting point of this dissertation. This area is easily accessible because of two major roads leading to the CBD of Maebashi. One part of this area was selected as the sample area in which a micro-level examination of land-use analysis was performed. Sites for large-scale facilities were excluded because they did not undergo land-use change during the study period. The area controlled for urbanization was also excluded due to insufficient transactions.

#### 1. Land-use change in the Rokku area in Maebashi city

Studies of land-use change on urban areas are numerous, but few examine ownership change, which is a fundamental issue in the conversion process. Changes in

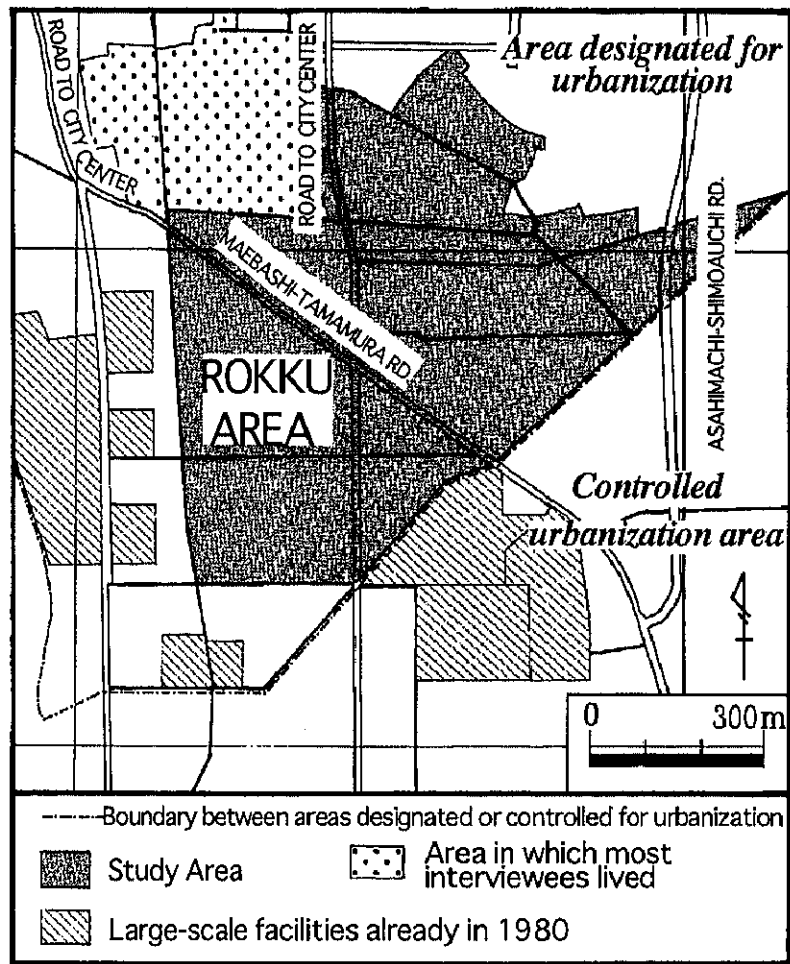


Figure 7. Sample area of Rokku, classified as rural/urban fringe in 1993.

land-ownership almost always precede alterations in land-use. Rural landowners play a pivotal role in the process because they decide how their property will be used, or when it will be sold for use by someone else. Buyers and sellers of rural property are the actors in the land market who set the course for changes in the urban structure.

In 1980, land-use in the southern part of the Rokku area was predominately rural, and in particular, paddy fields. Shops, rented offices, factories and high-rise apartment houses appeared along the main road leading to central Maebashi. The eastern part of the Rokku area was mainly residential (Figure 8(a)). By 1993, the most striking change that occurred was the decrease in rural land-use. At the same time, the number of roads increased with progress on the land re-adjustment program (Table 2) <sup>15</sup>. Along newly built roads there was a rapid increase in area-oriented usage such as shops, apartment houses and parking lots (with a capacity greater than 10 cars). Another notable change was the increase in wasteland and vacant land on which there are no buildings. Wasteland (and vacant land) was the result of either land re-adjustment, or abandonment<sup>14</sup>. This type of land-use change appeared in the south-west part, with relatively bad access to main roads. After the remarkable increase in urban land-use during 1980-93, urban land-use accounted for more than half of the total land area (Figure 8(b)).

## **2.Land-ownership change in the Rokku area in Maebashi city**

The distribution of the addresses of landowners in the sample area is showed in Figure 9 using land-ownership data from the Property Tax Division of Maebashi City Hall. In 1980, most major landowners were those who lived in the sample area. They accounted for 81.1% of the total sample area. Area-oriented usage had already

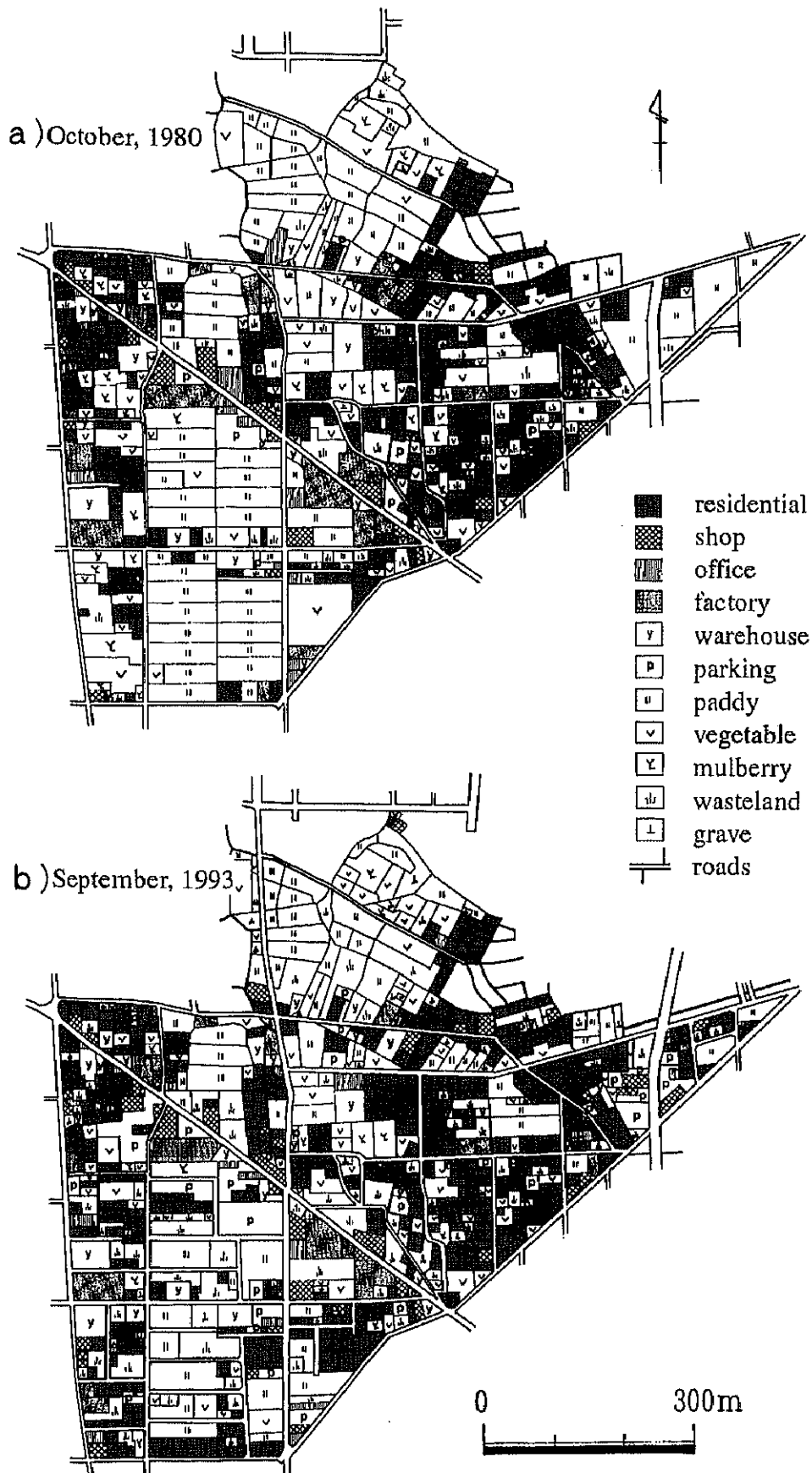


Figure 8. Land-use in Rokku area, Maebashi city for 1980 and 1993.

Sources: Based on aerial photo and the author's field survey.

**Table 2. Development of land re-adjustment in Rokku-machi, Maebashi city.**






Name of project	Rokku land re-adjustment program		
Conductor	Maebashi Municipal Office		
Planned period	1983~2001		
Date that the plan were decided	November 6, 1980 (Maebashi city) April 10, 1981 (Ministry of Construction)		
Date of public announcement	March 9, 1984		
Date of construction started	October, 1985		
Completion rate	Roads	Buildings	Total
1987	4.2%	1.2%	2.7%
1988	5.6	1.9	3.7
1989	6.8	2.5	4.7
1990	9.7	4.1	6.9
1991	13.4	7.2	10.3
1992	18.1	11.2	14.6
1993	36.2	14.0	16.8
1994	43.3	19.0	21.3
1995	48.2	23.9	25.1
1996	64.5	28.7	31.9
1997	74.2	33.0	36.5

(Sources: Based on data from the Urban Planning Division of Maebashi City Hall.)

a) 1980



Addresses of Landowners

-  Within the sample area (Rokku area)
-  Maebashi city  
(Rokku area is excluded)
-  Gunma Prefecture  
(Maebashi city is excluded)
-  Kanto Region  
(Gunma Pref. is excluded)
-  Others

b) 1993



Figure 9. Addresses of landowners in the Rokku area for 1980 and 1993.  
Sources: Based on data from the Property Tax Division of Maebashi City Hall.

dispersed from the city center to the Rokku area by 1980. For example, some head offices located in the Maebashi city center opened branch offices or warehouses in the sample area especially along some of the main roads. Moreover people in other areas like Maebashi city (excluding the Rokku area), Gunma prefecture (excluding Maebashi city) and Tokyo came to own residential lots which were relatively smaller parcels.

In 1993, the rate of land owned by those who lived in the Rokku area dropped to 77.8%. On the other hand, land owned by people in Maebashi city increased. Most of the land-ownership change was observed in the relatively broader land that extended over several parcels and more than 1,000 square meters in area. Two reasons are given for this type of land-ownership change: 1) The Rokku area provides good access to the city center and sufficient space for those who want to open branch offices or warehouses. 2) Since undertaking the land re-adjustment, some amount of land was needed by Maebashi Municipal Office (who conducted the program) for public facilities after the program was completed.

Figure 10 shows the number of land-transactions in the Rokku area for the years 1982 to 1991. The graph shows two peaks in the number of land-transactions, which occurred in the years 1984 and 1991, respectively. The first peak was due to a planned land re-adjustment program that was announced at the end of 1984. Since change in land-use was not permitted until land had been reallocated (a period of about six months after the announcement), transactions intended for the first half of 1985 must have been completed before the end of 1984. The announcement caused a 'run-in' effect for transactions in that year. The second peak was due to a greater than average number of land inheritances during that year. There is a close relationship between land-transactions and land-use change in an area ranging from the city centre to the

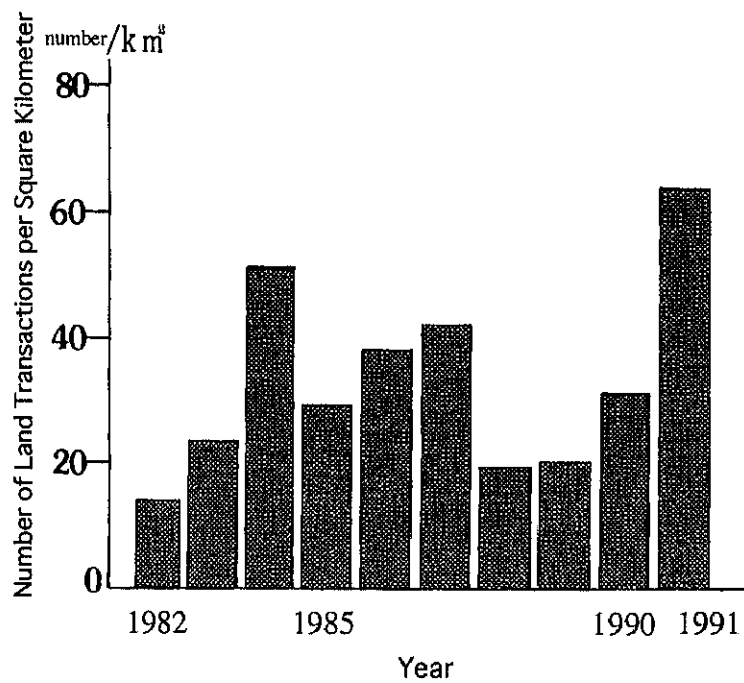


Figure10. Number of land-transactions in the Rokku area of Maebashi city by year for 1982 to 1991.

Sources: Based on data from the Property Tax Division of Maebashi City Hall.



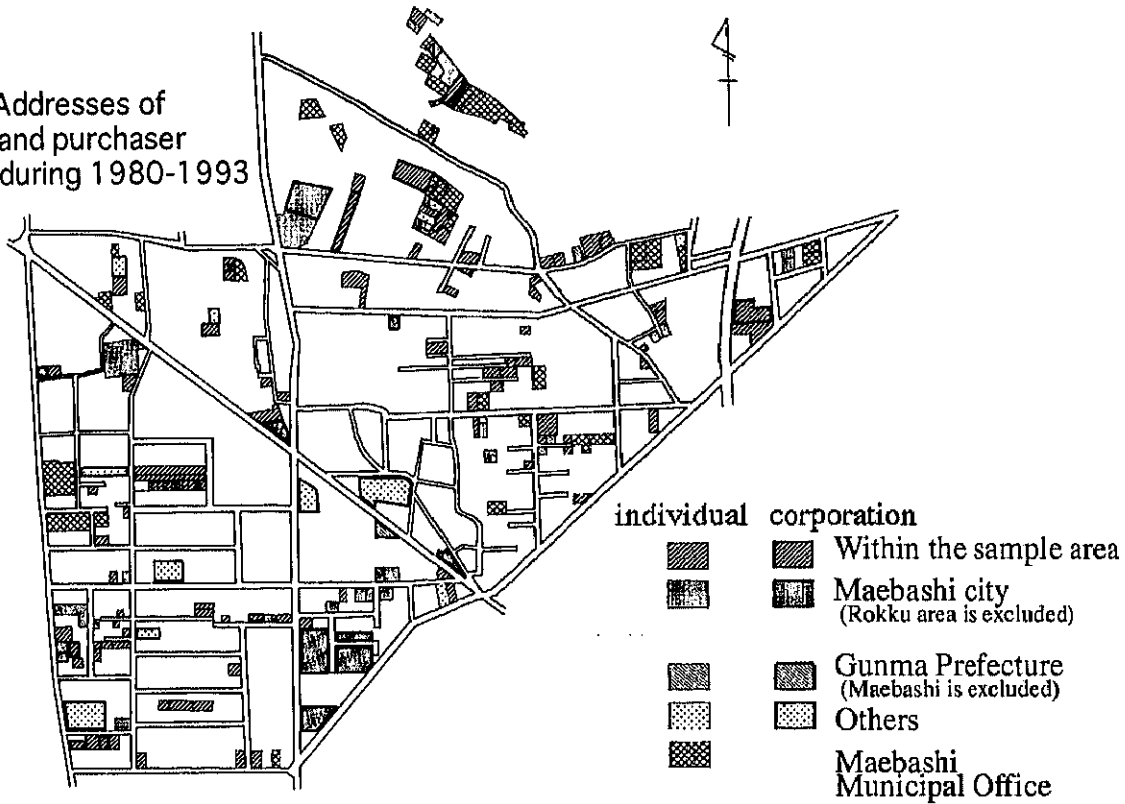
inner fringe under strong urban land demand (Tsutsumi, 1996; Pond and Yeates, 1993; 1994a; 1994b). Such a relationship was analyzed in the sample area of Rokku (Figure 11).

The major land buyers were individuals and corporations in the sample area, which were followed by individuals and corporations in Maebashi city and Maebashi Municipal Office itself. There were some examples of corporations domiciled in the Kanto region, especially in the Tokyo metropolis and Yokohama city that purchased land in the sample area. As for land-uses undergoing land-transactions, two tendencies are identified. One is a tendency for urban land-uses such as residences and shops, and the other is for wasteland. Some rural lots with good access to roads were replaced by shops, restaurants and *pachinko* palors. Even in lots without good accessibility were changed to residential use through real-estate firms. In addition, other notable transactions in the sample area included irregularly shaped lots smaller than 20-50 square meters, were purchased by office workers who already lived in the sample area. The sale of small lots was a countermeasure by landowner to the reduction of land due to the land re-adjustment program. The reduction rate was around 20-30% in the sample area. When a landowner has several parcels of land in the same project area, they can be easily integrated to form a new lot. The number of office workers who have purchased small parcels of land totaled more than 100.

### 3.Land-use decisions of agents

In the approach used so far in discussing the relationship between land-ownership and land-use change, it has been established that land-transaction is one of the most important factors in land-use change. There is, however, another cause of land-use

a) Addresses of land purchaser during 1980-1993



b) Land-use in September, 1993

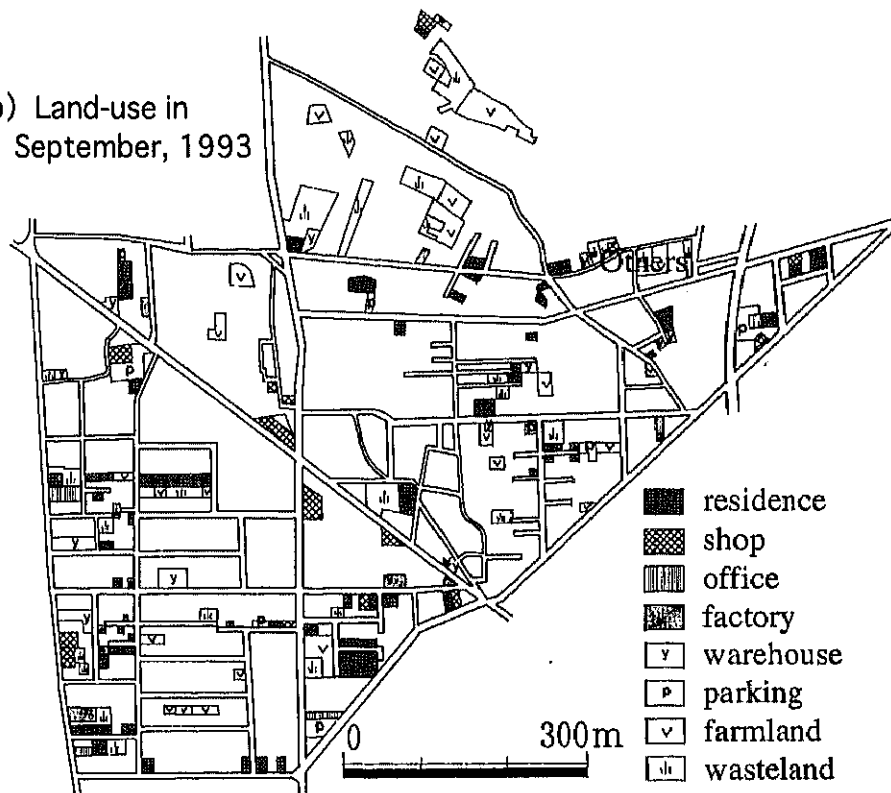


Figure 11. Distribution of traded land in the Rokku area of Maebashi city during 1980 to 1993.

Sources: Based on data from the Property Tax Division of Maebashi City Hall and the author's field survey.

change: landowners' utilization of their own properties. Landowners often provide some residential units on their land with good access to main roads. Thus, land-use change is brought about, primarily, in two ways; 'transaction' and 'utilization'.

In this section, the author focused on landowners' land-use decisions for which the reasons for those decisions differed between these two categories. Thirty landowners were selected as interviewees whose causes, conditions and behaviour of land-use decisions were closely examined. Of the thirty owners, 26 were farmers and the rest were non-farmers. Their land accounted for 43.6% of the total land-use change, 62.8% of the total inherited land and 45.0% of the total purchased land in the sample area. The rate of their own land to the total land of Rokku was 42.0% in 1980, which dropped to 34.1% in 1993. They all have a close relationship with relatively larger land transfer, such as transaction and inheritance of more than 1,000 square meters. In the interview landowners were asked about their reasons for disposing of landholdings. Items of question were land-use on their own land in 1980 and 1993, the reason for land-use change and for land transfer (land-ownership change).

The 30 landowners made their land-use decisions on their own land based on several causes and took on different behaviour. There were three types of behaviours: utilizing, trading (or selling), and abandoning land. They all sold some pieces of their land between 1980 and 1993. For 20 owners their behaviour was trading only; a combination of trading and utilizing was taken by four owners; three owners took a combination of trading and abandoning; three owners took a combination of utilizing, trading, and abandoning. (Figure 12). The landowners can be divided into four groups based on their behaviour: (1) trading, (2) trading and utilizing, (3) trading and abandoning, (4) trading, utilizing and abandoning. The 'trading' group of 20 owners

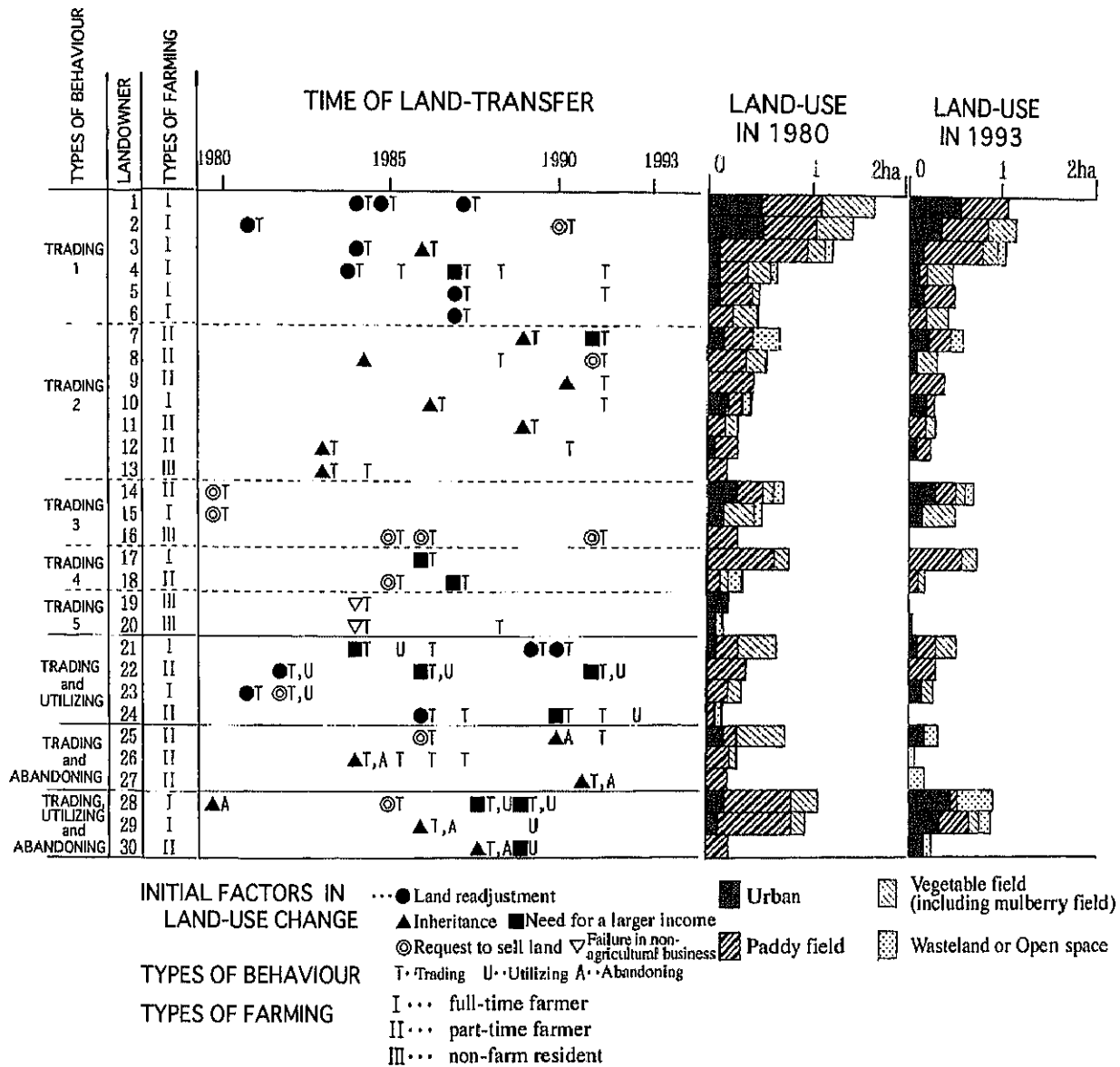


Figure 12. Land-transfer time for landowners and their land-use in the Rokku area of Maebashi city for 1980 and 1993.

Sources: Based on the author's field survey.

can be further subdivided into five categories based on the causes of their decisions.

‘Trading 1’ includes six owners and is characterized by owners selling some part of their land because the impending land re-adjustment program was expected to adversely affect their farming management<sup>17</sup>. They managed rice farming, in combination with wheat growing, sericulture and truck farming. Since their priority was farming, they decided to sell their land to purchase land in the rural farmland area (several kilometers away) that could be farmed more effectively.

‘Trading 2’ includes seven owners and is characterized by the owners who sold some part of their land to pay inheritance tax. These seven owners consisted of one full-time farmer, five part-time farmers and one non-farmer whose farmland was rented to another farmer. The full-time farmer had been a non-farmer before he retired from his regular job. After retirement he turned to full-time farming. The characteristics of this type of owner were that most of them combine vegetable farming with rice growing which is easy to keep with a non-farm regular job. After land inheritance, they sold only the minimum amount of land needed to pay inheritance tax, and tended to keep their former farming management.

‘Trading 3’ includes three owners and is characterized by owners who sold some part of their land due to requests to sell in accordance with rapid increase in urban land demand. Two of the three owners have kept their former farming management for the remainder of their land. The other owner, who was a non-farmer (owner number 16 in Figure 12), sold all of his land in the Rokku area (about 3,000 square meter) to Maebashi Municipal Office which was the conductor of the land re-adjustment program.

‘Trading 4’ includes two owners and is characterized by owners who sold some

part of their land due to need for a larger income. Landowners in this type are full-time farmers growing only rice. Since their farming managements were simple and were not efficient enough, the income was not sufficient for them.

'Trading 5' consists of two non-farm landowners who have sold out their own land due to the failure of their non-farm businesses. Before they started the businesses, they had been farmers with more than 2,000 square meters of farmland.

'Trading and utilizing' includes four owners. The decision-making processes of this type of landowner are similar to those of the 'trading 1' type, but differed as to whether they utilize some part of their land or not. They also sold their land to purchase farther rural land where they could farm more effectively. Moreover, they have constructed some buildings, e.g., apartment houses, shops and parking lots in the Rokku area, so that they could supplement their income by renting such properties. That is, owners in this type adapt the way of land-use to suit the occasion.

'Trading and abandoning' includes three owners. Their reasons for selling land were inheritance, just the same as those of the 'trading 2' type. In addition they abandoned some part of their land as well as selling. The difference between these two types was their attitude to farming management. In the 'trading and abandoning' type, only one or two persons continued farming in each family, while other members have non-farm regular works. After the death of a farmer, usually a head of the family, they cannot keep their former farming management. In this case almost all their land for cultivation was abandoned and turned to wasteland.

Finally, 'trading, utilizing and abandoning' consists of three farmers. The decision-making processes of this group of owners was the same as those of the 'trading and abandoning' type, but there was a slight different in the combination of their

behaviour: They also chose utilization. When the head of the family died, the decision to rent apartment houses or parking lots was taken by the surviving family members because they had no other source of income — either they had no other job, or could not farm the land.

#### **4.Land conversion due to land-use decisions**

The landowners in the sample area made land-use decisions based on two types of factors: the initial factors and decision factors. The initial factors were land re-adjustment, land inheritance, need for a larger income, request to sell their land, and failure of a non-agricultural business. Decision factors were the existence of their successors in agriculture, payment of inheritance tax, intention to keep farming, possession of land with good access to roads, and their own desire to utilize the land. Based on their decisions, their behaviour can be divided into three categories: trading (or selling), utilizing, and abandoning land (Figure 13).

Some farmers in the sample area made land-use decisions based on their intentions to keep farming. They sold part of their land to purchase new land several kilometers away in rural farmland areas that could be farmed more effectively. Moreover if the intention to keep farming was high, even when the head of the family died, the surviving members generally sold only a part of their land to pay inheritance tax while managing the remaining land for farming as before. On the other hand, some combinations of behaviour can be seen in the group where the intention to farm was low. When the head of the family died they tended to utilize, abandon, or sell their land. For example, if their desire was to utilize their land, some portion with good access to roads tended to be converted to urban use, such as apartment houses, shops and

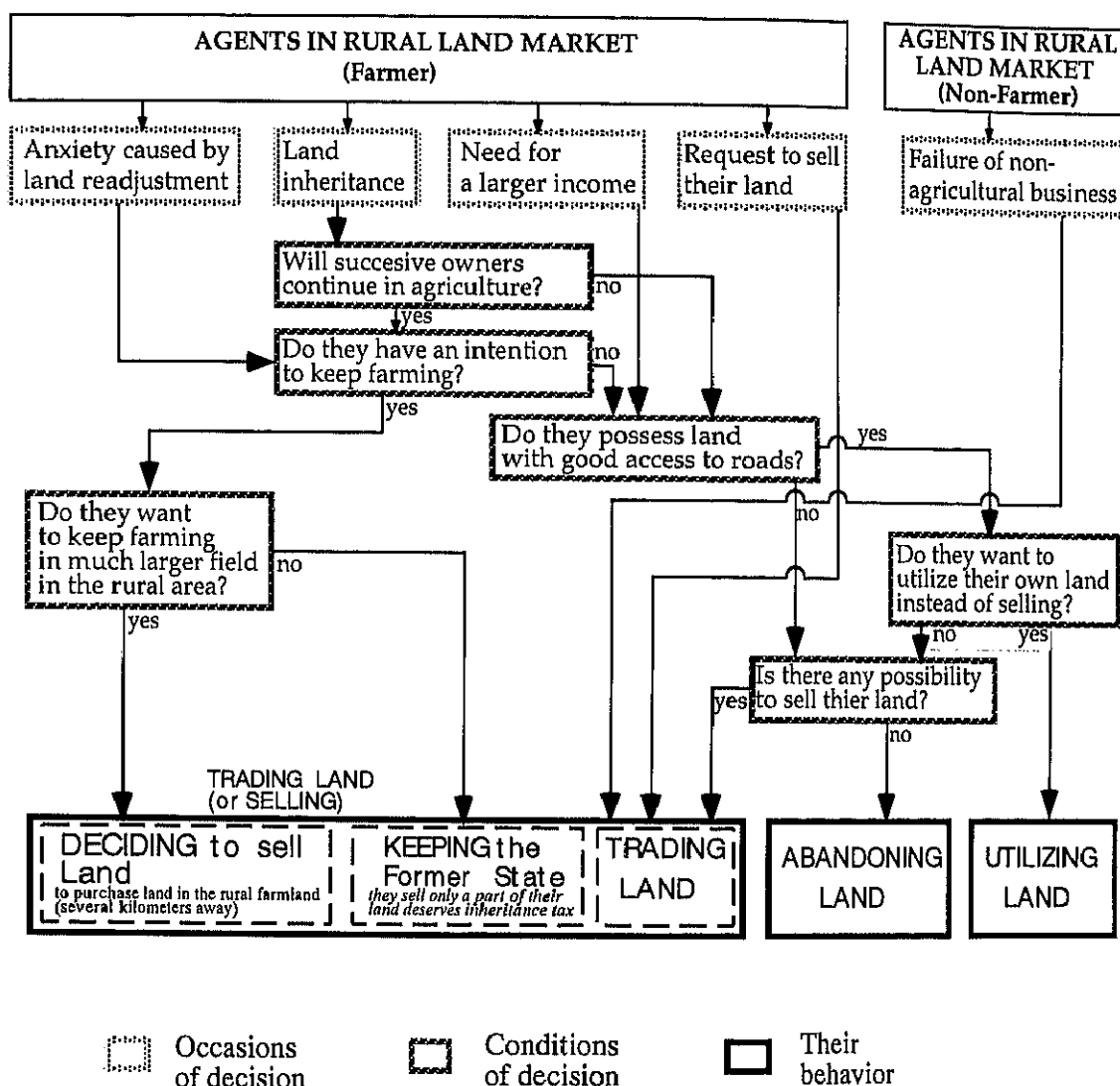


Figure 13. Land-use decision making processes of agents in the Rokku area of Maebashi city during 1980 to 1993.

Sources: The author's field survey (interview).



parking lots. If utilization was not desired, portions of land that were highly valued tended to be sold, while lowly valued portions tended to be abandoned. In case of non-farm landowners, some principal reasons for selling were at the request of a second party; and the failure of their non-farm businesses.

The distribution of land converted by landowners for the three types of behaviour is shown in Figure 14. Most of the traded land was converted to urban use such as housing, parking or shops through small real-estate firms. Utilized land, which has been converted from rural to urban use by its owners, was distributed along the main roads leading to central Maebashi and close to the owners' houses. Land abandonment occurred as a result of an ongoing agricultural labour shortage (mainly caused by inheritance); and as a countermeasure against the reduction of land due to land re-adjustment. Most of the landowners, especially office workers who owned residential property in the sample area, purchased small lots and left them idle. Lots that have been reduced in size due to land re-adjustment can then be combine all idle lots, so that owners' loss of land due to land re-adjustment is minimized. Abandoned land became scattered among other land-uses resulting in urban sprawl. Utilized land and traded land were based on different decisions by the landowners. Much of the land in the inner fringe was in demand. Thus, both land being utilized and land being traded tend to be converted to urban uses.

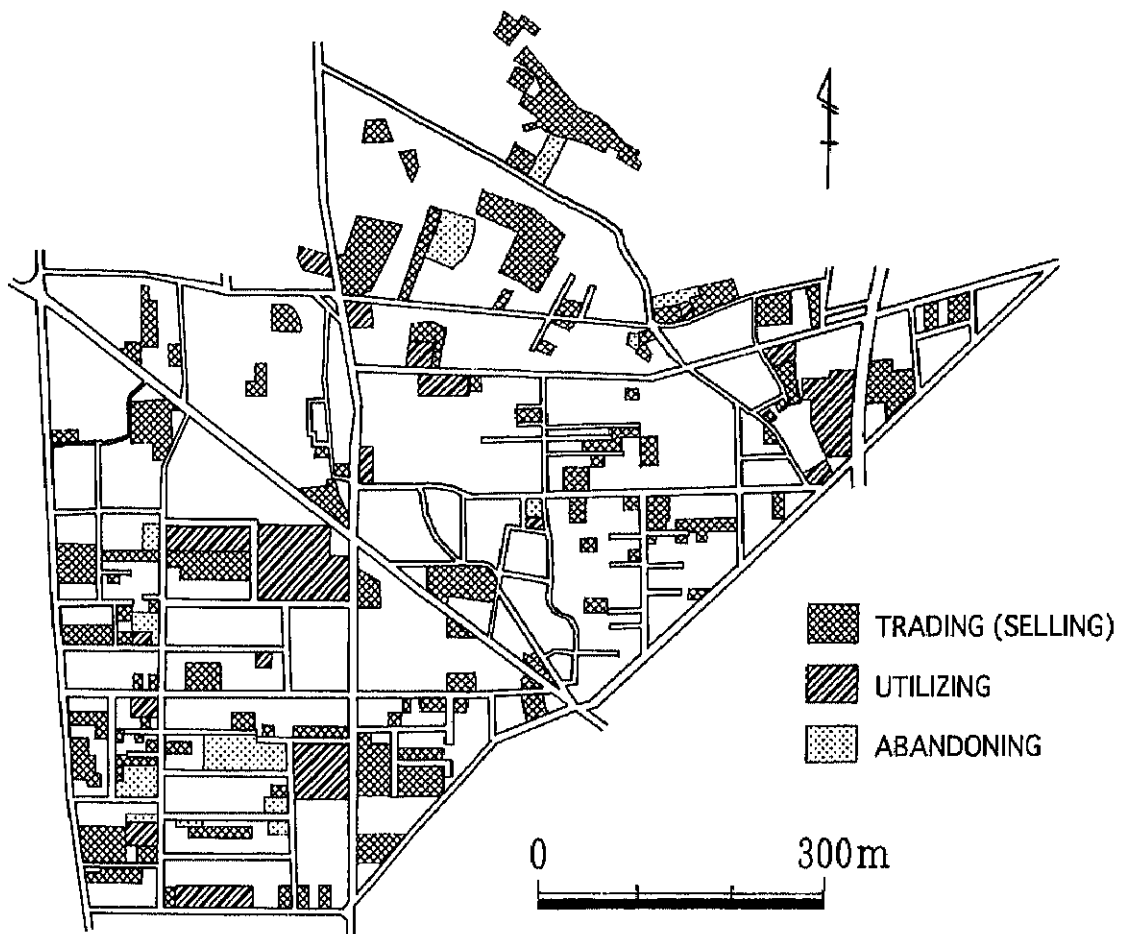


Figure14. Distribution of converted land in the Rokku area of Maebashi city during 1980 to 1993.

Sources: Based on data from the Property Tax Division of Maebashi City Hall and the author's field survey.