

# Reorganization of Public Utility Facilities by "Compact Village Concept" in Mountainous Area

## - Case Study on Nichinan Town, Tottori Prefecture -

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### Abstract

In Japan, the number of children is decreasing and the number of elderly people is increasing, thus, compact town development is required in mountainous areas. Nichinan has been promoting the "compact village concept" for more than 20 years. This study clarifies the current situation and problems for consolidating public facilities and housing development for the Shoyama/Kasumi district in the central area of Nichinan. The town population was the highest in 1950 with 16,045 people. The current population is 4,765 people and continues to decline. Furthermore, the number of elementary and junior high school pupils is less than 10% of that in 1960. The town's aging rate is 47.5%, far surpassing the national average of 27%.

Conclusion: (1) The Shoyama/Kasumi district is easily accessible from all other districts in the town and has been recognized by townspeople as a central district for approximately 100 years. (2) This central area has the necessary resources for daily life, such as nursery schools, elementary and junior high schools, a town office, cultural centers, commercial and post offices, agricultural cooperatives, road station, train station, hospital/welfare facilities, residential areas, and gas stations. (3) Since the municipality merger in 1959, this town has been promoting the compact village concept by integrating junior high schools in 1974, nursery schools in 2006, and elementary schools in 2009 and consolidating them into the Kasumi district.

**Keywords:** compact village concept; mountainous area; public utility facilities

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### 1. Introduction

In Japan, the number of children is decreasing and the number of elderly people is increasing, thus, compact town development is required in mountainous areas.

Nichinan Town is part of the Tottori Prefecture and is located mostly in a mountainous region. Nichinan has a declining population because the population has shifted to urban areas, especially with the declining birth rate and aging population. This town is aiming to become a "compact village," with centralized public facilities, including elementary and junior high schools in the center, and it aims to provide less-wasteful living and administration.

### 2. Purpose

Nichinan has been promoting the "compact village concept" for more than 20 years. This study

clarifies the current situation and problems for consolidating public facilities and housing development for the Shoyama/Kasumi district in the central area of Nichinan.

### 3. Survey Method

- (1) Creation of place map and building list of public facilities in the town center
- (2) Interviewing the town office staff
- (3) Analysis of historical and statistical information by town history books<sup>1-2)</sup> and prefecture statistics<sup>3)</sup>

### 4. Current Situation of Town

#### 4.1. History of Municipal Merger (Fig.1)

Currently, the area in which Nichinan is situated is called the Oku Hino in the Chugoku Mountains, and the once main industries were forestry and the Tataro ironworks. Owing to the municipal merger from the Meiji to Taisho period (1912–1921), this area comprised the seven villages of Hinogami,

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Yamagami, Omiya, Abire, Tari, Fukusakae, and Iwami. In 1955, during the Showa period, the town of Hakunan and Takamiya village were built due to a partial merger, and this area comprised five municipalities. The current town of Nichinan was made by the merger of five municipalities in 1959. The surrounding municipalities of Nichinan were studied during the 2000s, in the Heisei period, but no merger was performed.

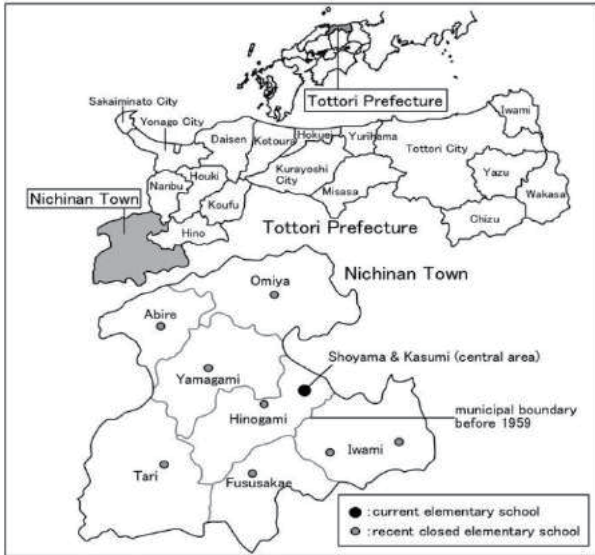


Fig.1. Location of Nichinan Town and Merger Situation of Municipalities in Showa Period.

**4.2. Change Town Population (Fig.2)**

The town population was the highest in 1950 with 16,045 residents, and it decreased to less than 10,000 in 1975. The current population is 4,765 and continues to decline. The town population has decreased to approximately 30% of its maximum value. The town's aging rate is 48%, far surpassing the national average of 27%. The population of Tottori Prefecture decreased from 614,000 people in 1955 to 573,000 people in 2015, and the decrease rate was 7%. The town's population decline is progressing rapidly.

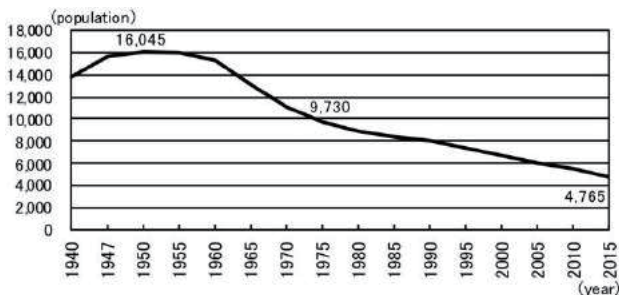


Fig.2. Change Population of Nichinan Town.

**4.3. Change in the Number of Students in Tottori (Fig.3)**

In Japan, the first baby boom happened between 1947 and 1949 after the war. The number of

elementary school students in Tottori prefecture peaked at 90,451 students in 1958. The secondary baby boom occurred between 1971 and 1974, and the number of elementary students increased to 56,125 in 1983. The elementary students thereafter gradually declined to, in 2016, approximately 30% of the peak, approximately 29,791 people, which is approximately 50% of the peak in 1983. The number of junior high school students in Tottori prefecture peaked at 48,919 students in 1962, and 28,558 students in 1987.

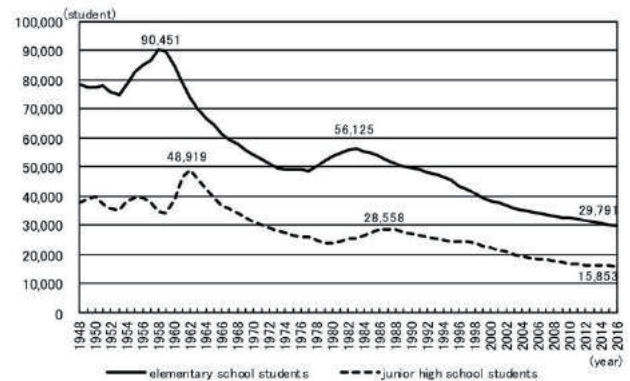


Fig.3. Change Number of Elementary and Junior High School Students in Tottori Prefecture.

**4.4. Change in the Number of Students in Nichinan (Fig.4)**

The number of elementary school students in Nichinan Town was 2,370 in 1960. Subsequently, the number of students continued to decrease, even in the 1980s, when the second baby boom generation came into existence. The number of students decreased by 10 to 20 every year after 2005, and it was 147 in 2016. The number of junior high school students was also 90 in 2016. As described later, the junior high school was integrated into one new school in the 1970s, and the elementary school was integrated into one new school from 2006 to 2009.

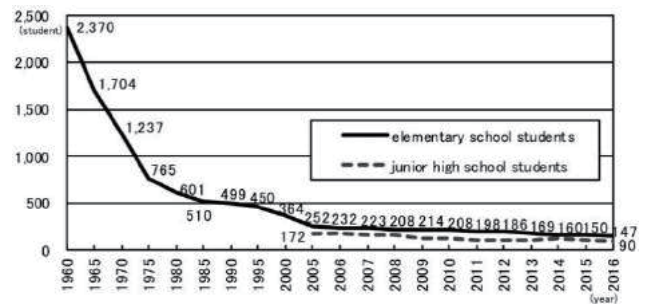


Fig.4. Change Number of Elementary and Junior High School Students in Nichinan Town.

**5. Creation and Integration of Elementary and Junior High Schools in Town**

**5.1. Creation of Elementary and Junior High Schools (Fig.5)**

In this town area, 17 elementary schools were created by the School System Law in 1872 of the Meiji period. After that, the elementary schools were consolidated in accordance with the municipalities merger of the Taisho period. The main school was one village and one elementary school (only Iwami had two schools). The elementary school had arranged for a branch school deep in the valley because of the long distance and winter snow. Small-scale branch schools were connected to these eight main schools. There was no particular integration movement in the Showa and prewar period<sup>4)</sup>.

After the war, seven villages established village junior high schools in accordance with the New Junior High School System Law in 1947. As a result, each village had almost one village school, one elementary school, and one junior high school. The junior high school building was developed by conversion of the closed youth school, partial rental of the elementary school building, etc. From 1947 to 1951, each village built a new junior high school building. In the latter half of the 1950s and early 1960s, a gymnasium, library, engineering room, and science room were added to junior high schools<sup>5)</sup>.

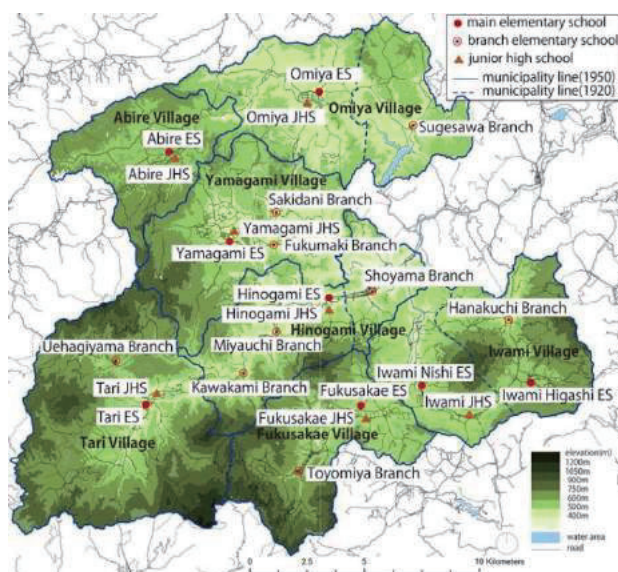


Fig.5. Situation of Elementary and Junior High School in 1950.

### 5.2. Junior High School Integration in the 1970s (Fig.6)

The movement of school integration in depopulated areas throughout the country was inspired by the 1970 Emergency Depopulated Areas Measures Law, and the national assistance rate of building integrated school buildings was raised to 2/3. At this time, the total number of students in the seven junior high schools in the town had decreased sharply to 2/3. Under these circumstances, after performing a residents' intention survey and maintenance planning, the junior high school

primary integration plan was created in 1971. Furthermore, in April 1973, the new building of the Nichinan junior high school was completed in the Kasumi district. Nichinan became one town with one junior high school. During this integration, the town prepared seven school buses and a winter dormitory to accommodate students' extended school attendance. Because the number of faculty for each subject and labor costs were large, junior high schools were prioritized and integrated into one.

In this way, the town integrated seven junior high schools into one school over the four years of the first half of the 1970s. The integrated junior high school was newly built in the Kasumi district, in what was wide field until then. This development triggered the subsequent compact village concept.

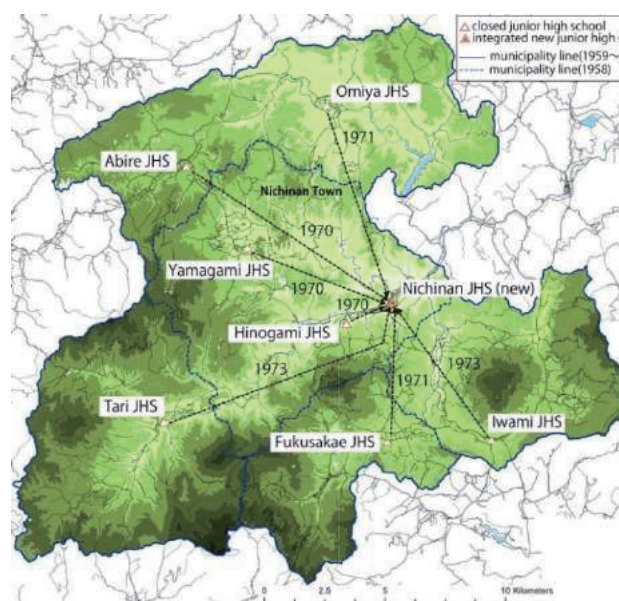


Fig.6. Situation of Junior High School Integration in 1970s.

### 5.3. Elementary School Integration in 2000s (Fig.7-8)

In the Heisei period, the number of students gradually decreased at eight main elementary schools. The seven elementary schools except the Hinogami School were small schools with 40 or fewer students. During this period, many municipalities merged in Tottori Prefecture, according to the 2005 Heisei municipality merger law. However, Nichinan did not have municipality mergers. In this situation, the town decided to integrate elementary schools. Following this decision, in 2006, four schools, Omiya, Yamagami, Sakidani Branch, and Abire, were merged into the Yamanoue Elementary School. At the same time, the Hanaguchi Branch was integrated into the main school. In 2008, the Ministry of Education, Culture, Sports, Science, and Technology announced the "disposition of property related to subsidies for



public school facilities development," This notice makes it easier to integrate schools in the amortization of subsidies. In 2009, the six elementary schools were consolidated and became the new Nichinan elementary school<sup>6)</sup>.

The eight-elementary-school system, based on the old villages in town, that was established in the Taisho period, continued for about 80 years, over the merger period of the municipalities in the 1950s and the junior high school integration period in the 1970s. Because these elementary schools functioned as base facilities for regional activities and events for a long time, deciding on the integration was difficult. These elementary schools were integrated into one elementary school in two stages over three years to reduce the number of students. A new elementary school was newly built in the neighborhood of a junior high school in the Kasumi district, aiming for collaborative education between elementary and junior high school in view of integration.

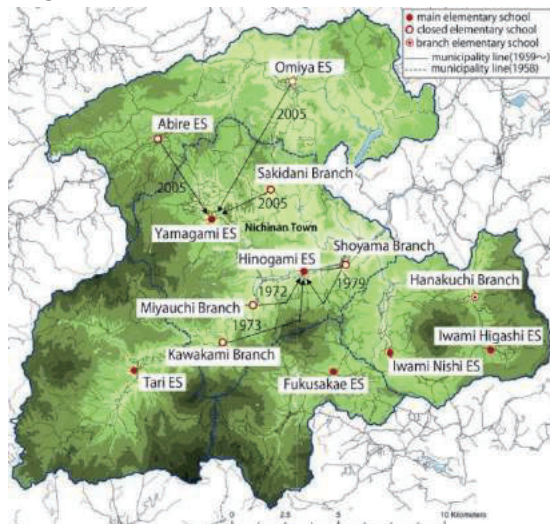


Fig.7. Situation of Elementary School Integration from 1970s to 2005.

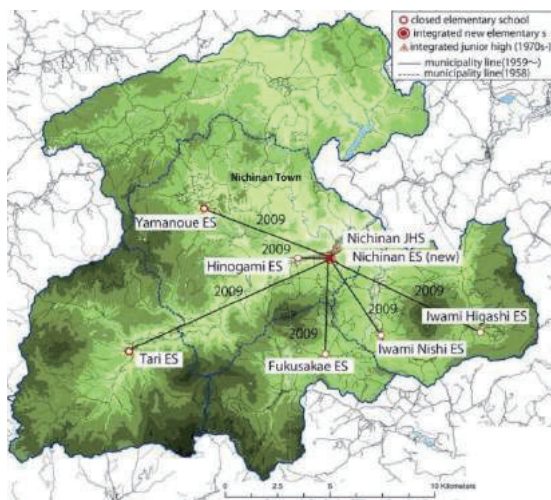


Fig.8. Situation of Elementary School Integration in 2009.

## 6. Town Topography and Bus Route (Fig.9)

The town management bus has five routes, and it also serves as a school bus for elementary and junior high school students. All bus routes go through the central district. Each district that was an old village was separated by a valley. It is more convenient to go through the central district to go to other districts. The town also charges for the bus routes in demand.

Nichinan is connected to Yonago, Okuizumo town (Yokota) of Shimane, Shobara city of Hiroshima, and Niimi city of Okayama, and townspeople can go in four directions. However, because traffic is regulated by snow in the winter, townspeople make use of shopping and facilities in the central district or Yonago.

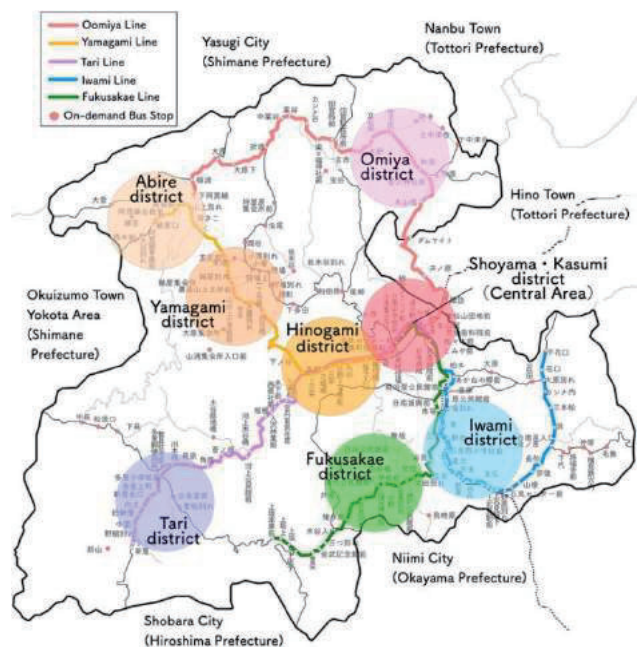


Fig.9. Town Bus Route and Neighborhood Municipalities.

## 7. Historical Overview and Area Composition of Center District (Fig.10)

### 7.1. Historical Overview of Center District

The original center of the town was the Shoyama district, where there is a train station. However, the Shoyama district is somewhat narrow in the valley, and the development location has moved to the adjacent Kasumi district, which was farmland. The landscape of the Kasumi district has changed significantly in the past approximately 50 years. In the town, the Shoyama/Kasumi district has been recognized by the townspeople as a central part for nearly 100 years, so consensus was easy to obtain when consolidating facilities.

### 7.2. Area Composition of Center District

In the compact village concept, the Shoyama and



Kasumi district is divided into four areas. Each area has a development theme (Fig.10).

The Kasumi area is consolidated by its facilities, such as the town hall and cultural center. The Odawara area aims at developing places in which people outside the town can gather, centering on stores and road stations, and making use of forestry-related sites. The Kitanoara area aims to establish educational facilities as nursery, elementary, and junior high schools. The Shoyama area, with stations, must help local shops and users and effectively utilize station buildings.

## 8. Background of Facility Consolidation (Table 1)

### 8.1. Location of Facilities until the Early 1960s

Shoyama station opened in 1923. Until the early 1960s, shopping streets, police stations, and bank branches were built around Shoyama station, and it was the center of Nichinan.

Especially with the merger of municipalities in 1959, the old town hall and the current Nichinan Hospital were established in Shoyama. Shoyama was positioned as the central area of Nichinan after the municipal merger.

### 8.2. Location of Facilities until the 1980s

In 1962, the improvement of the town sports facilities started, and the town wanted a large area of land. A comprehensive playground and gymnasium were built in the Kitanoara area in Kasumi that had been farmland until then. In the junior high school

Table 1. Construction Year and Facility Type of Public Facilities in Central District.

construction year	facility number	facility name [ renovation history etc.]	facility type					
			school sport	hospital welfare	housing	other public	store bank	
1923	1	JR Shoyama Station [2003-2004.7 renovation]						
1954.7	2	Police Station (Shoyama)						
1954.9	3	Sanin Bank Branch (Shoyama)						
1959	4	Nichinan Nursery School						
1959.4	5	Town Hospital [1973.11 rebuild 2000.2 extension of recuperation beds 2000.5 extension of recuperation building]						
1961.3	6	Tottori Bank Branch (Shoyama)						
1962.6	7	Town General Playground						
1969.3	8	Town Gymnasium						
1975.2	9	Integrated Nichinan Junior High School [1978.12 extension of club house]						
1982.1	10	Town Martial Arts Field						
1991	11	Town Management Apartment Place (Kirishima)						
1993	12	Public Rental Housing (Obara)						
1994.4	13	Prefectural Management Apartment Place (Hakunan)						
1995.3	14	Post Office (Nichinan)						
1996	15	Public Rental Housing (Comforta Nichinan)						
1996.6	16	General Cultural Center						
1996.6	17	Library and Museum						
1997.10	18	Shopping Square Paseo (store)						
1999.2	19	Town Management Apartment Place (Kobushi)						
2000	20	Public Rental Housing (Tanohara)						
2000	21	Public Rental Housing (Kitanoara)						
2000.4	22	Town Health and Welfare Center						
2000.10		< earthquake of east area in Tottori prefecture; town hall suffered damage >						
2001.5	23	Kasumi New Town						
2002.3	24	Station Avenue Purara (store)						
2002.5	25	Town Hall						
2003.6	26	Public Rental Housing (Nagomino-sato)						
2004	27	Post Office (Shoyama)						
2004.4	28	Town Bus & School Bus Standby Place [2004.10 start of town management]						
2005.2	29	Agricultural Cooperative Branch (Shoyama)						
2005.4	30	Welfare Association Home Help Center/ Day Service Center						
2008.4	31	Day Service Center (Nijino-sato) Welfare Group Home (Nijino-sato)						
2009.4	32	Integrated Nichinan Elementary School + Pool						
2010		< Nichinan Town central area development plan >						
2011.4	33	Welfare Group Home (Asahino-sato)						
2013.4	34	Child-rearing Support Center						
2015.1	35	Home Center (store)						
2015.12	36	Trial Housing/Short-stay Housing for Elderly						
2015.2	37	Convenience Store						
2016.4	38	Road Station (store)						

■ : Kasumi ■ : Shoyama

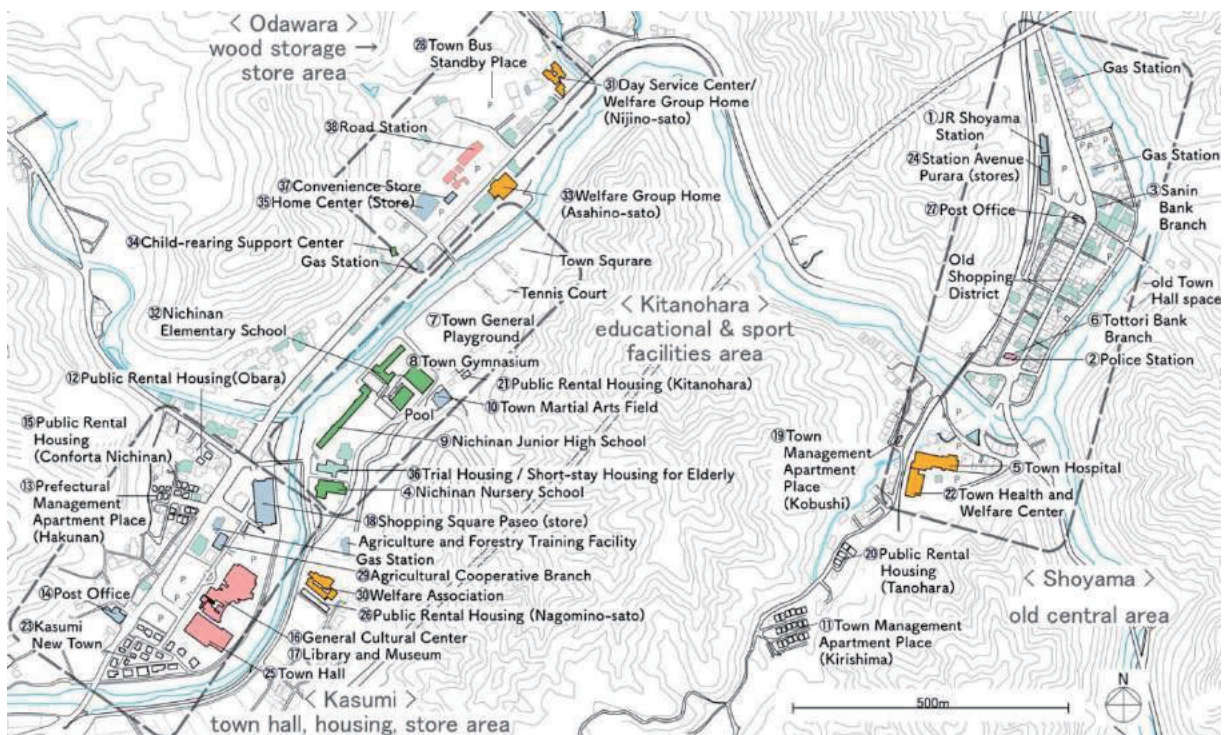


Fig.10. Location of Public Facilities in Central District (Shoyama/ Kasumi).

integration of the 1970s, an integrated school was built in the Kitanohara area of Kasumi, including securing a large site and effectively utilizing sports facilities.

### 8.3. Location of Facilities until the 1990s

In the 1990s, town and prefecture management housing was developed. The seven residential houses developed until 2000 were placed in three places in Shoyama and four places in Kasumi. This housing was developed with the balancing of the two districts. However, Kasumi continued the construction of a general cultural center, library, and art museum in 1996, along with a post office and a shopping center. Nichinan developed housing and various functions supporting it in Kasumi.

### 8.4. Location of Facilities until the 2000s

During the Tottori Prefecture Earthquake in 2000, the old Nichinan town hall and the mountain behind it in Shoyama were damaged. Because of this disaster, a new town hall and housing areas have been built in Kasumi, and consolidation of public facilities further advanced. Meanwhile, from 2002 to 2004, Shoyama station and the surrounding area were renovated to promote Shoyama.

Since 2005, welfare facilities were constructed in Kasumi with the increasing elderly population. In 2009, integrated elementary schools were built in the neighborhood of the junior high school, and education and sports facilities were consolidated in the Kitanohara area of Kasumi.

### 8.5. Location of Facilities since 2010

After the announcement of the central region development concept (compact village concept) in 2010, the Odawara area, which was a forestry place within Kasumi, developed welfare facilities, child-rearing support facilities, various stores, and road station. Currently, Nichinan is promoting the compact-village concept, consolidated in the central Shoyama and Kasumi district, and necessary facilities for living, such as public, educational, commercial, medical and welfare facilities, post offices, agricultural cooperatives, gas stations, and housing.

Intensification of junior high schools in the 1970s triggered the development of central districts. At present, integrated elementary, junior high, and nursery schools are adjacently arranged to become an area of integrated education.

## 9. Conclusion

(1) The Shoyama/Kasumi district is easily accessible from all other districts in the town and has been recognized by townspeople as a central district for approximately 100 years.

(2) This central area has the necessary resources for daily life, such as nursery schools, elementary and junior high schools, a town office, cultural centers, commercial and post offices, agricultural cooperatives, road station, train station, hospital/welfare facilities, residential areas, and gas stations.

(3) Since the municipality merger in 1959, this town has been promoting the compact village concept by integrating junior high schools in 1974, nursery schools in 2006, and elementary schools in 2009 and consolidating them into the Kasumi district.

(4) It is desirable to clarify the effect of centralization of public facilities on the population and industry, along with the problems of each former village affected by the consolidation.

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