

Discussion on the factors of sustainable urban growth  
in shrinking region: Case study of Eucalyptus Hills in  
the city of Sakura developed by the private developer  
Yamaman

Tetsuji UEMURA<sup>1</sup>

<sup>1</sup>*Nomura Research Institute*

**Abstract:** There are many previous studies discussing the issues and solutions of shrinking cities, but only a few studies have discussed the sustainable development of shrinking cities. This study focuses on the case of the Eucalyptus Hills development by Yamaman, its private developer, known as a best practice sustainable development of new towns in the city of Sakura in the Tokyo suburb in Japan. The study reviews the recognised aspects and features of the Eucalyptus Hills development as sustainable development by Japanese researchers and aims to abstract the implications for sustainable developments in shrinking cities. As the results, three features, namely, the existence of a mono-developer (town manager), a certain size of population to support living services business and a well-balanced demographic composition, can be considered as the conditions required for sustainable development in shrinking cities. These research results may be applied for dormitory towns in the suburbs of megacities, with sufficient job opportunities for such towns.

**Keywords:** Shrinking cities, Sustainability, Eucalyptus Hills, Yamaman

## I. Introduction

### 1. Background

Not only in Germany, France and the United States, but also in Japan, there have been many studies on shrinking cities (Adhya, 2017; Baur et al., 2006; Fujii, 2013; Hollander, 2018; Oswalt, 2005; Pallagst et al., 2014; Richardson and CHang Woon, 2014; Ryan, 2012; Yahagi, 2014). There are various patterns of shrinkage in the cities, and one study categorised shrinking cities as having three types: “continuous”, “episodic”, and “temporary”, from the demographic change perspective (Wolff, 2018; Wolff and Wiechmann, 2017).

Generally, population decline is a premise in the discussion of shrinking cities. Most of the research interest is not on adaptation and mitigation of population decline, but on reviving or regenerating urban areas. On the other hand, there is much discussion on sustainable urban developments, including on sustainable urban resource usage and reducing environmental burdens (Cohen, 2017; Flint and Raco, 2012; Moore, 2007). It is very curious that there is such limited previous research discussing the sustainable development of shrinking cities, apart from discussion from a space planning perspective (Ganser and Piro, 2012) and sustainable urban space planning methodology for both urban growth and shrinkage from a spatial planning perspective (Wang and Fukuda, 2019).

What is sustainable urban development specifically? Is it the situation in which urban space with a certain density of urban activity can be sustained in the future? Can these cities be called “shrinking cities”?

The general definition of sustainability or sustainable development is to maintain or to improve the per capita supply or quality of elements in society, the economy and the environment, as triple bottom lines (Elkington, 1998; Hediger, 2000; Neumayer, 2003; Pearce and Atkinson, 1993; World Commission on Environment and Development, United Nations, 1987). In the context of shrinking cities, the situation in which the living quality per capita from social, economic and environmental perspectives is maintained and improved by the degeneracy of the city function and controlling the occurrence of nuisance through urban decline can be described as “sustainable”. However, these general definitions do not provide sufficient knowledge for the appraisal of the validity or special planning of specific development actions for sustainable development in shrinking cities.

In Japan, we have the best practice which most experts agree can lead to successful town development in shrinking cities. This is the Eucalyptus Hills development by Yamaman<sup>1</sup>. Normally, typical Japanese dormitory town developments are called “withdrawal type developments”, in which the developer will sell out all the plots in the short term, but the Eucalyptus Hills development is called a “growth management type development”, where the developer will continue to sell plots for a long time, such as over more than 30/40 years (Yamaguchi, 2016). The Eucalyptus Hills case is very well-known practice and many researchers, including the senior director of Yamaman, have already introduced its approach from various aspects (Goda, 2011; Hayashi, 2014, 2013; Iwashina, 2012; Katagiri, 2009; Koutani, 2014; Yamaguchi, 2016). These discussions do not necessarily follow the general definition of sustainability, but their results may have elements of sustainable development in shrinking cities.

## 2. Aim

This study reviews the case of the Eucalyptus Hills development by Yamaman and the elements that are recognized as success factors by other researchers. Also, this study determines the features of the Eucalyptus Hills development and abstracts the general implications for sustainable development in shrinking cities.

---

<sup>1</sup> <https://www.yamaman.co.jp/>

## **II. Methodology**

### **1. Research framework**

In this study, 5 axes – demographic change, social aspects, economic aspects, environmental aspects and time frame – are set as a framework to analyze the development activities carried out by Yamaman.

### **2. Methods**

#### **1) Literature study**

The literature survey was conducted in NDL-OPAC<sup>2</sup> and CINI<sup>3</sup> using the keyword “Eucalyptus Hills”. Also, the keywords “Eucalyptus Hills” and “sustainability” are used for Google and Google Scholar searches to collect presentations, blogs and published reports.

#### **2) Desktop study**

Mainly, the Yamaman corporate website<sup>4</sup> is checked for the desktop study. Also, information on the population to be supported by living support services are collected as supplementary information.

#### **3) GIS data analysis**

GIS data from the National Land Numerical Information download service<sup>5</sup> and Statistics Bureau, Ministry of Internal Affairs and Communications<sup>6</sup> are used for spatial analysis.

#### **4) Statistics**

The national population census, population statistics for the city of Sakura, and corporate financial data of Yamaman are used as statistics.

---

<sup>2</sup> <https://ndlonline.ndl.go.jp/>

<sup>3</sup> <https://ci.nii.ac.jp/>

<sup>4</sup> <https://www.yamaman.co.jp/>

<sup>5</sup> [http://nlftp.mlit.go.jp/ksj-e/gml/gml\\_datalist.html](http://nlftp.mlit.go.jp/ksj-e/gml/gml_datalist.html)

<sup>6</sup> <https://www.e-stat.go.jp/gis/statmap-search?type=2>

### III. Results

#### 1. Case study area and company

##### 1) City of Sakura

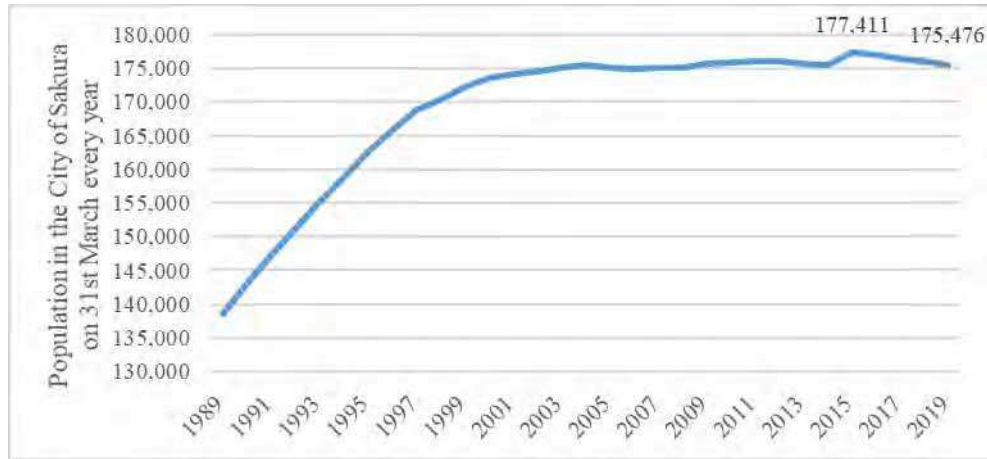
Eucalyptus Hills is located in the city of Sakura, which is in the Kanto region and 40 km from Tokyo Central Station. It is located between Tokyo and Narita airport, and the highway, Japan Railway (JR) and Keisei Electric Railway line between Tokyo and Narita pass through the city. In particular, the Keisei line has a station at Eucalyptus Hills although only local trains call at the station. Therefore, Eucalyptus Hills is one of the dormitory towns for Tokyo Metropolitan Area.



Source: National Land Numerical Information Administrative Zones Data and OpenStreetMap

*Figure 1 Location of Eucalyptus Hills in the city of Sakura in Japan*

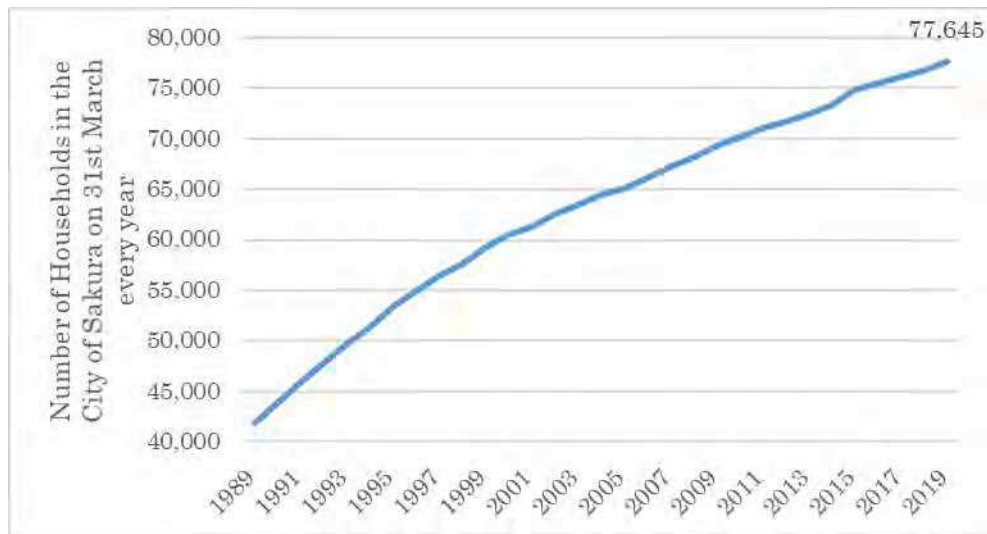
In the city of Sakura, the population was growing until 2000, but it has become stable since 2000. The population in the city peaked at 177,411 in 2015 and is 175,476 as of 31<sup>st</sup> March, 2019, which means a 1.1 % population loss in four years (Figure 2).



Source : The City of Sakura

Figure 2 Population trend in the city of Sakura from 1989 to 2019

In contrast to the population, the number of households has continuously increased from 1989 to 2019. As of 31<sup>st</sup> March, 2019, the number is 77,645 (Figure 3). This means that the size of a household (the population in one household) is declining continuously.



Source : The City of Sakura

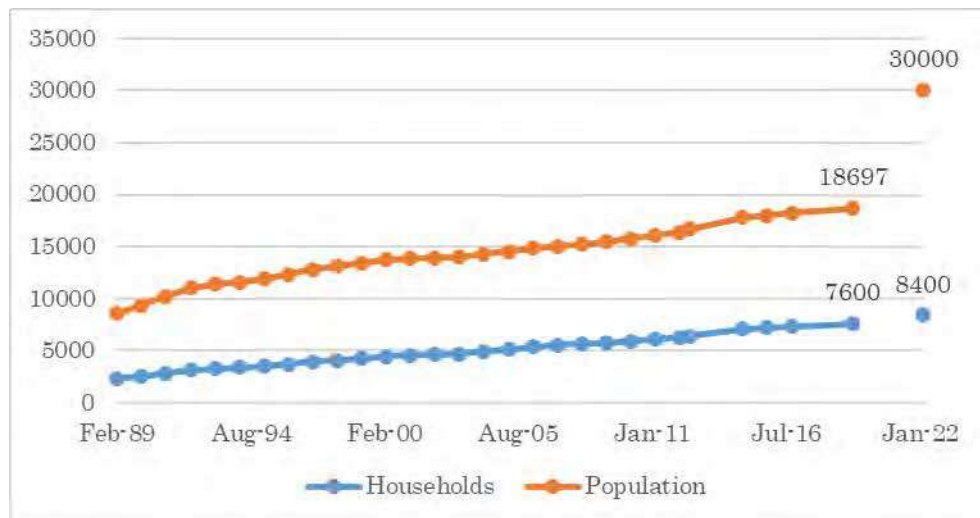
Figure 3 Trend of number of households in the city of Sakura from 1989 to 2019

## 2) Yukarigaoka (Eucalyptus Hills)

The objective development areas include 1 chome (district) -6 chome of Miyanodai, 1 chome-7 chome of Eucalyptus Hills, Minami Eucalyptus and 1 chome-7 chome of Nishi Eucalyptus. These areas are called shrinking cities.

Eucalyptus Hills has been developed by Yamaman since 1971. Yamaman acquired land in 1971, cleared it and started construction in 1977, starting to sell houses in 1979. Its developed area is 245 ha, the target number of houses was 8400, the planned population was 30,000, and the planned number of annual house sales was 200<sup>7</sup>. The calculated development period was 42 years and the planned completion year was 2022. The targeted population of 30,000 was set from the administrative rule that it can be an administrative unit called a city in Japan if there is a population of at least 30,000; the population size in Letchworth in the UK as a representative new town was 32,000 (Hayashi, 2013).

As of April 2019, 18,697 people and 7600 households live there. The progress rate of households taking up residence is 90.5% and the population is 62.3% (Figure 4). The reason for the difference between the progress rate of households and the population is the decline in the size of households. In the plan, the size of households was considered as 3.57 people/household, but the actual number is 2.46 people/household (as of April 2019). Also, the speed of increase in the number per household is less than the annual supply of 200 houses in the plan (maximum 300 houses if the skyscraper tower apartment rooms are provided) (Hayashi, 2013) recently, and the development speed is also slowing down (Figure 4).



Source: (Hayashi, 2013) and Yamaman website

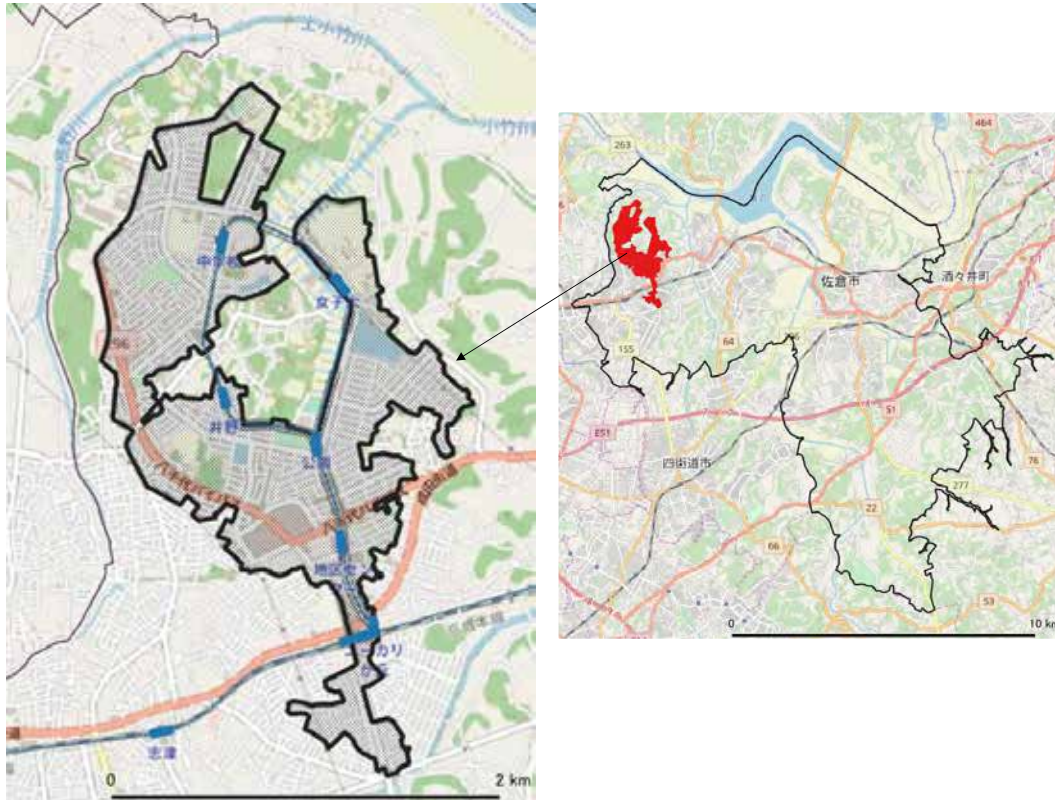
*Figure 4 Goal and progress of the development of Eucalyptus Hills*

Eucalyptus Hills is located on the nearside of Tokyo in the city of Sakura and is 7 km from the city centre of Sakura where the city hall is. Eucalyptus Hills is also located in between Makuhari Messe (convention hall area) and Narita International Airport (Hayashi, 2013). Keisei Electric Railway line connects Makuhari Messe, Eucalyptus and Narita airport as well as Haneda airport to each other.

<sup>7</sup> Step-by-step sale system (Goda, 2011)



Eucalyptus Hills is spread along the Yamaman Eucalyptus line<sup>8</sup> in a doughnut shape, starting from the Eucalyptus Hills station on the Keisei Line (Figure 5). The centre hole is the original settlements and some woodland and rice paddies still remain next to the developed land. They are outside Eucalyptus Hills.



Source: National Land Numerical Information Administrative Zones Data, Statistics Bureau, Ministry of Internal Affairs and Telecommunications small district boundary data for 2015 National Population Census<sup>9</sup> and OpenStreetMap

*Figure 5 Location of Eucalyptus Hills*

Eucalyptus Hills is being developed as a dormitory town for Tokyo and most of the area is being developed as a low-rise exclusive residential area. Many detached houses have been developed there. Middle- and high-rise collective houses (apartments) are also located in the middle-to-high-rise exclusive residential area (Figure 6).

Schools and necessary public facilities are being developed in the Category one medium-to-high-rise exclusive residential area. This is because the urban planning act in Japan allows such public facilities

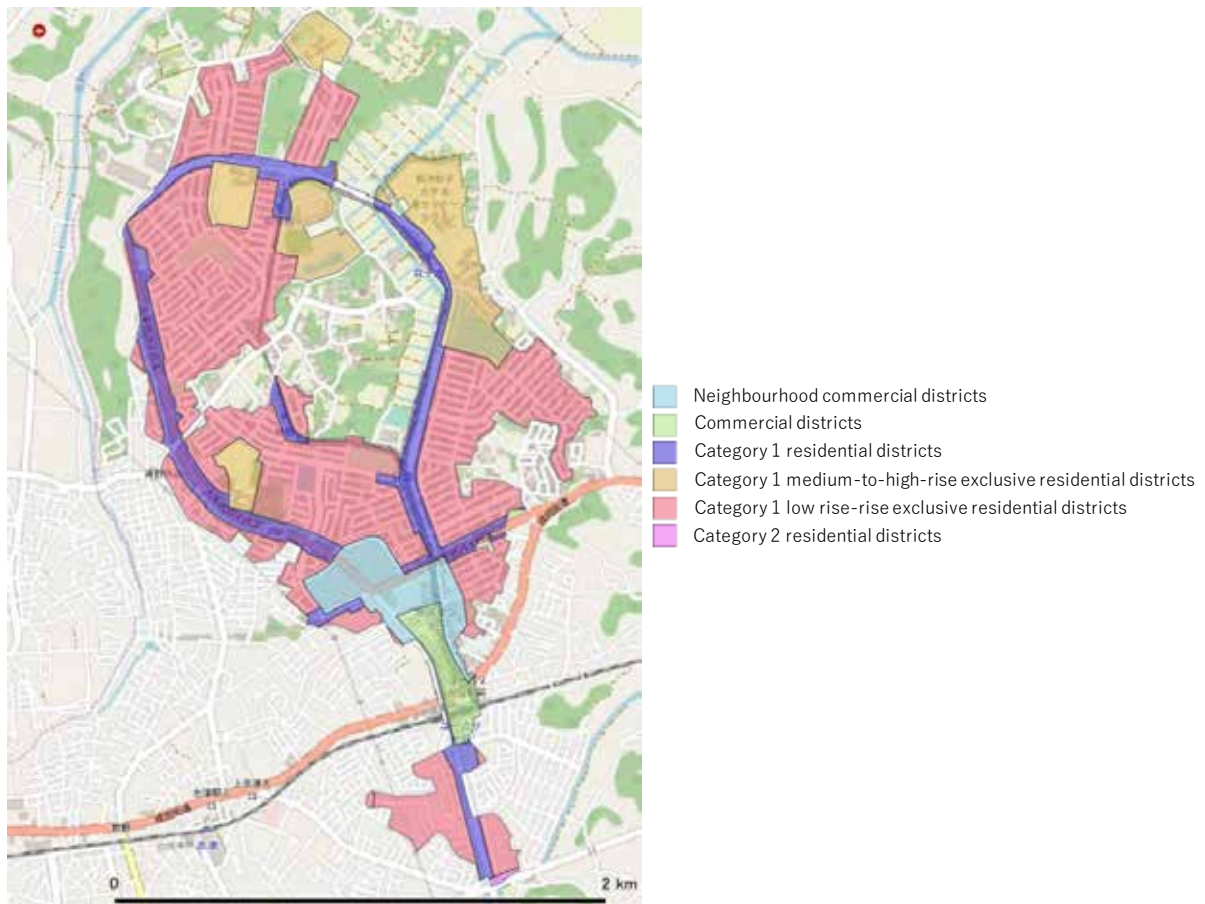
<sup>8</sup> This is the Automated Guideway Transit (AGT), called Vehicle of New Age (VONA) and middle size public transport

<sup>9</sup> <https://www.e-stat.go.jp/gis/statmap-search?page=1&type=2&aggregateUnitForBoundary=A&toukeiCode=00200521&toukeiYear=2015&serveyId=A002005212015&prefCode=12&coordsys=2&format=shape>

for residents to be built in these exclusive residential areas. According to the Building Standard Law, the floor area ratio is bigger in the middle/high-rise area than the low-rise area (Figure 7).



Figure 6 Landscape of Eucalyptus Hills



Source: National Land Numerical Information Designated land use districts and OpenStreetMap

Figure 7 Designated land use districts in Eucalyptus Hills as of 2011

In the development areas, commercial zones are also allocated near to the station. The development of office buildings, residential accommodation and commercial buildings is allowed in the zone, but factories and industry-related facilities are not permitted by the urban planning act. Also, the areas along the trunk road and Yamaman Eucalyptus line are designated as a Category one residential district, in which it is allowed to develop commercial facilities like retail shops supporting people’s everyday life (Figure 8). These locations are able to support residential consumer life.





*Figure 8 Commercial mall in Eucalyptus Hills*

Thus, Eucalyptus Hills includes residential areas and commercial zones, but does not incorporate so many office areas and industrial areas. Therefore, the major job opportunities for the residents in Eucalyptus Hills must be sought outside.

### 3) Yamaman<sup>10</sup>

As noted, Eucalyptus Hills is being developed by Yamaman, which also provides community management services after the sales of houses. Yamaman is a private developer. Private developers and public corporations like the Urban Renaissance Agency are typical players in new-town developments in Japan.

Yamaman was founded as a textile wholesaler in February 1951 in Osaka. After that, it moved to Tokyo in 1964 and started residential land development in 1965. It began to develop Shonan Highland in the city of Yokosuka in 1965 and the Eucalyptus Hills development in 1971. It had earlier experience of residential land development before Eucalyptus Hills, including at Shonan Highland, Kami-Shizu housing complex, Uruga housing complex, Yachiyodai housing complex and Koumyouji housing complex. These are all sold-out models and did not specialize in growth management with community management as a necessary element.

In the first case, Shonan Highland is located on the top of a hill, but Yamaman did not provide any public transport services. Access from the nearest station was not convenient and for residents the climb up the hill took 20 minutes. In the last stage of sales, issues of the aging of the first families resident there occurred. These experiences are reflected in the development concept of Eucalyptus Hills (Hayashi, 2013).

The sales turnover of Yamaman in 2018 was 10.112 billion JPY and the number of employees is 136. Yamaman is not listed on the stock exchange. This is because listing a stock is not suitable for long-

---

<sup>10</sup> This section is based on information from the Yamaman corporate website

term property development like Eucalyptus Hills and it would localize into the Eucalyptus Hills. Therefore, most of the company's employees, including senior directors, live in Eucalyptus Hills and group companies providing community services are also registered to Eucalyptus Hills. Yamaman understands that this localization is useful to determine the community business opportunities because Yamaman can share any conflict of interest with residents and identify needs promptly (Hayashi, 2014, 2013).

The business scope of Yamaman is as follows;

- Real estate appraisal, supervision, trading, brokerage, and management operations of rental rooms, rental buildings, and parking lots and residential land creation sales business.
- Design and construction services for civil engineering, architecture and landscaping.
- General transportation services by rail.
- Management of hotels, sports facilities and play facilities.
- Consultancy services for medical care and health care.
- Lending and selling medical care service business and welfare care equipment.
- Power generation business using renewable energy, etc., and management and operation of it, and business related to buying and selling of electricity.

The following Table 1 shows an outline of the group companies.

*Table 1 Typical company of Yamaman group to provide community services in Eucalyptus Hills*

<b>Sector</b>	<b>Name of companies</b>	<b>Outline</b>	<b>URL</b>
<b>Facility management</b>	Y.M.Maintenance Co., Ltd	Security guards, general building management, child care business, welfare business, management of leisure facilities, etc.	<a href="http://www.y-m-m.co.jp/">http://www.y-m-m.co.jp/</a>
<b>Landscape management</b>	Koyo Co., Ltd.	Exterior, planting work, surveying and registration work, etc.	<a href="http://www.koyo-yukari.co.jp/">http://www.koyo-yukari.co.jp/</a>
<b>Hotels</b>	Wishton Hotel Co., Ltd.	Hotel, banquet, conference hall, marriage ceremony	<a href="http://www.wishton.co.jp/">http://www.wishton.co.jp/</a>
<b>Agri business</b>	Yamaman Eucalyfarm	Agricultural production in greenhouses. In the future, it is also assumed to take on facility management.	<a href="https://farm.yukarigaoka.jp/">https://farm.yukarigaoka.jp/</a>
<b>Social care services</b>	Yukariyutokai	Life-Care business for local residents (operation of nursing care facilities)	<a href="http://www.yutokai.com/">http://www.yutokai.com/</a>

Source: <https://www.yamaman.co.jp/company/group/>

## **2. Factors of sustainable urban development in the case of sustainable development of Eucalyptus Hills**

Typical Japanese new town properties are sold to 30-40-year-olds and sold out for 5 to 10 years. This leads to a migration of the younger generation in about 40 years and issues of aging, as a result of which a new town changes into an old town. In order to avoid this, mixed generation habitation is important. Continuous acquisition by 30-year-olds with young families as the primary owners of houses and catching secondary owners from changes of residence within the same housing complex are necessary (Goda, 2011). In Eucalyptus Hills, Yamaman looks forward in 10 years to developing a community management service and is promoting three-generation living and residence changes to maintain the variety of residential generations (Hayashi, 2014).

Yamamoto has defined residents' intention to settle as the sustainability of a housing complex and studied it in Eucalyptus Hills, referring to this as growth management development. The results of a questionnaire survey (valid responses = 142) on residents' intention to settle in Eucalyptus Hills, and analysis of the results of this survey data by discriminant analysis and factor analysis suggest that three major factors, "parents and children living together", "attachment to the Yamaman Eucalyptus Hill line as a symbol", and "Satisfaction with shopping facilities and transportation functions" are highly related to the residents' intention to settle in Eucalyptus Hills. The interesting point of this study is that most of the respondents do not use the Yamaman Eucalyptus line, but they do feel some attachment to it (Yamaguchi, 2016). This suggests that some symbols attracting residents are necessary for sustainable development in shrinking cities, in addition to practical convenience and economic benefits as discussed in social capital.

Yamaman has continued to sell property since 1979, that is, for almost 40 years. The fact that the company is unlisted is considered to be one important reason why Yamaman can continue its policy. Also, the demographic balance is pointed out as another important factor of sustainable development. In addition, the spatial planning of almost all the areas of Eucalyptus Hills, which can be covered within 10 minutes walking distance from the station of the Yamaman Eucalyptus line (6 stations and frequency of every 13'35'') is another key element. Furthermore, Yamaman provides amusement facilities and services for residents (Hayashi, 2014).

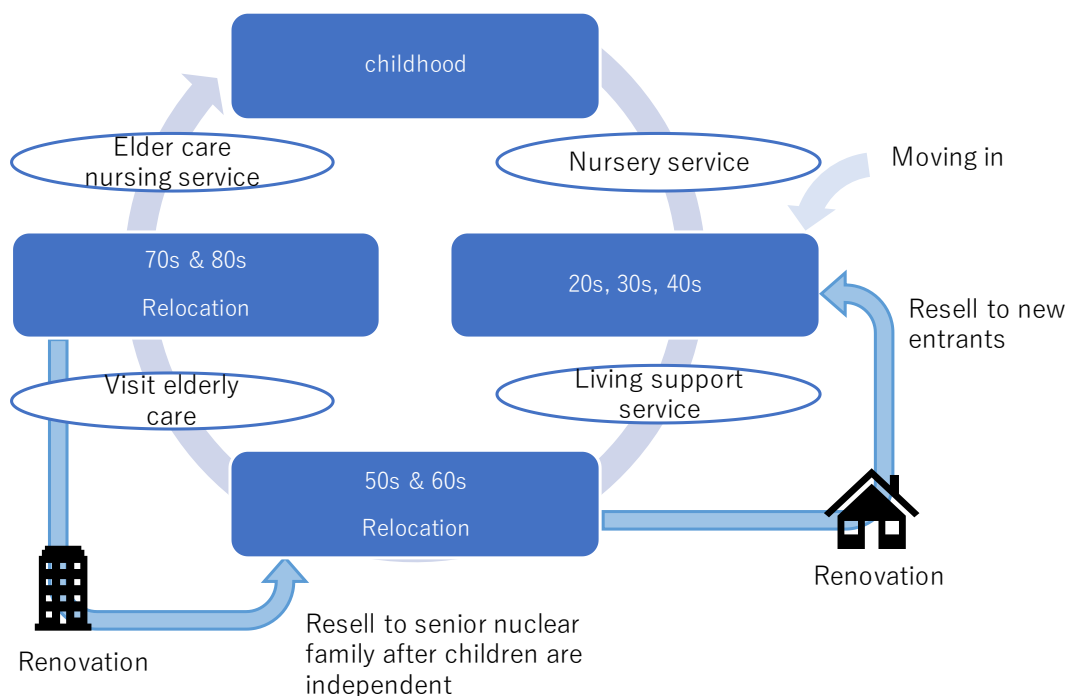
Yamaman has paid much tax to the city of Sakura, but the prefectural government has refused Yamaman's request to establish a police box in front of the stations. So, Yamaman itself established its own security patrolling service centre, comprising four cars and providing 24×7 services.

Moreover, Yamaman pays attention to social care services. In 1997, Yamaman launched the concept of a social caring town development to cope with aging in the Eucalyptus Hills and allocated 15 ha of land for care facilities for the elderly and disabled. Also, Yamaman started to introduce countermeasures to the falling birthrate in the 1990s in order to maintain the demographic balance of the composition of residents in the area. In 1999 it established a nursery with a garden, open till 2200 in front of the station. In addition, non-authorized nursery services, a general child care support centre,

and a schoolchildren’s nursery services, Eucalyptus Yuto Pia,<sup>11</sup> which is an integrated nursery and elderly care facility, were developed by Yamaman.

From the environmental aspect, Yamaman start to operate an EV community bus service (Hayashi, 2013). Also, historic sites and natural green areas have been conserved as green spaces<sup>12</sup>. In addition, an agri-business has been developed for the production of tomatoes and other vegetables in greenhouses and for the provision of farming opportunities for residents (Hayashi, 2014).

Yamaman is now changing its business model from flow-type (sales of property) to stock (sales of services). It proposes a “Happy Cycle System” (Figure 9) to residents. The Happy Cycle System is a package that has been promoting the relocation of residents within Eucalyptus Hills in accordance with their life stage since 2006. Yamaman offers 100% of the purchase price to assess the value of their previous houses, does not charge an intermediary fee for real estate and introduces the next houses to residents. Fifty families have already used this promotion package in 2014 (Hayashi, 2014), and elected not to move out from Eucalyptus hills.



Source : <https://realestate.yukarigaoka.jp/contents/code/happycircle>

Figure 9 Happy Cycle System in Eucalyptus Hills

<sup>11</sup> <http://www.yutokai.com/facility/yutopia.html>

<sup>12</sup> The supply of the number of houses is controlled by Yamaman. This means that a small area of development is continuing every year. Some residents complain to Yamaman about destroying the green space and about noise in some cases (Uchino, 2010).

Yamaman has supplied various type of houses and living-support facilities<sup>13</sup> in Eucalyptus Hills. For example, living-support facilities and high-storey apartments have been developed in front of the station and detached houses with enough space for childcare have been developed in the areas further from the station. These different types of accommodation allow residents to choose suitable houses for their life stage. Yamaman also refurbishes houses purchased from the elderly and sells them to younger people with children in order to attract this generation to Eucalyptus Hills. In Japan, it is often the case that a second-hand house is normally discounted by 20%–30% compared to a new house. Accordingly, the provision of cheaper second-hand houses helps younger families with children to live in Eucalyptus Hills (Goda, 2011).

In addition, Yamaman is inviting a college to set up in order to increase the young population, to provide lifelong learning opportunities, and to utilize the local human resources, including people retired from large companies, research institutes and so on. The aim of setting up a college is to establish a “Continuous Care Retirement Community (CCRC)” (Hayashi, 2014).

In terms of community management by an area management team consisting of three Yamaman employees, the team visits its area of responsibility every day and in some emergency situations, like the Great East Japan Earthquake, it visits solitary old persons to check on their wellbeing as well as to distribute food and drink if necessary (Hayashi, 2014).

Table 2 shows the above-mentioned activities by Yamaman following the sustainability framework.

*Table 2 Summary of Yamaman’s strategy and actions for the factors of sustainable development*

Perspectives		Actions by Yamaman
<b>Population</b>	Continuous population inflow	Instead of selling homes at one time, the developer will take time to sell to new tenants continuously.
	Balanced demographic composition	In order to develop an area for the long term, it is necessary to consider the development cycle of the area and the population balance. In particular, it is important to make efforts to cope with the aging rate and to increase the number of households with children (increase in primary school children).
<b>Society</b>	Existence of symbol	The presence of a symbol (Yamaman Eucalyptus Hill Line) that enhances the people's centripetal power improves the attractiveness of the residence.
	Provision of crime prevention and disaster prevention services	Yamaman complements its security base in areas where a prefectural police box is not developed and it has the residents operate a crime prevention organization (self-help / co-help).
	Development of childcare facilities	To develop a municipality-approved nursery in front of the station to improve the quality of life of households with

<sup>13</sup> Multiple commercial facilities have been developed, but some shop space remains vacant. Some residents pointed out the closure of retail shops sometimes (Uchino, 2010). The 20,000 population is not small, but it is true that keeping the service level of living-support commercial facilities is one of the important issues in Eucalyptus Hills.



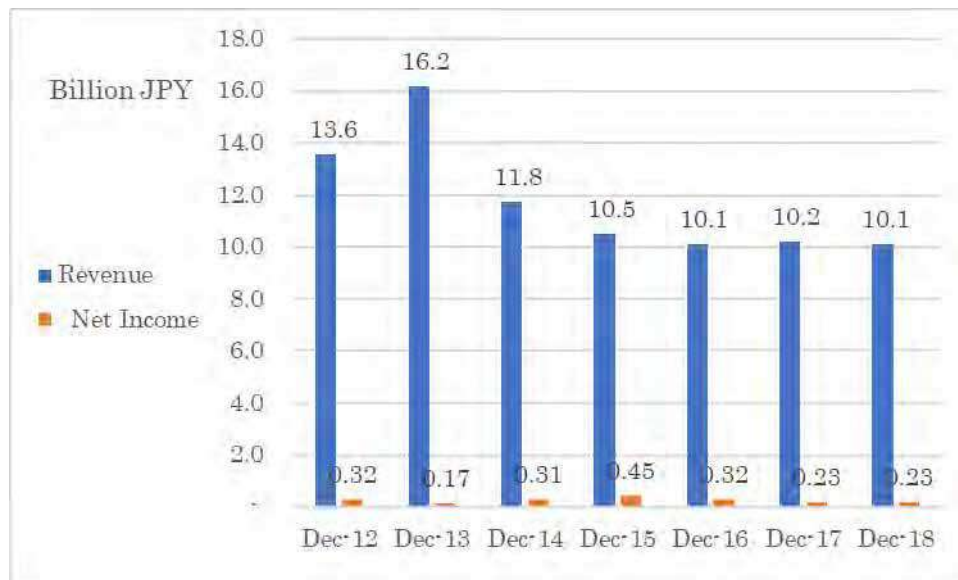
<b>Perspectives</b>		<b>Actions by Yamaman</b>
		children and attract more families with children. In addition, Yamaman set up a nursery school outside authorization, a general child care support centre, schoolchildren's nursery school for primary school children.
	Development of elderly care facilities	To maintain visiting care facilities and nursing homes in the area.
	Community management by area management team	A team of three Yamaman employees visit the area of responsibility daily. At the time of the Great East Japan Earthquake, they visited the homes of the elderly living alone and distributed rice and water as needed.
	Inviting amusement facilities such as cinema complex	Maintenance and operation of leisure facilities such as movie theatres, bowling alleys, and hot bath facilities
<b>Economy</b>	Ensuring the convenience of commercial facilities	To maintain shopping facilities and attract tenants while considering local needs so that shopping is convenient.
	Localization of group companies and creation of local jobs	To secure local employment by setting up a group company specializing in Eucalyptus Hills.
	Being an unlisted private developer	Being unlisted allows developers to continue development from a long-term perspective.
	Relocation support by Happy Cycle system	By purchasing 100% of assessed value of residents' houses when they relocate within Eucalyptus Hills, Yamaman supports the formation of assets of the residents and reduces the economic burden at the time of relocation.
<b>Environment</b>	Community bus service by EV bus	To operate community EV bus that circulates in the area.
	Leaving moderate amounts of space such as green space and small-scale farmland	The landscape is maintained by developing with the historical green areas in the region and the natural green areas such as Satoyama.
	Tomato cultivation for the purpose of sales inside and outside the area	Tomato cultivation at Eucalyptus farm supplies food to the region and provides opportunities for agricultural experiences in the future.
<b>Time-axis</b>	Town development that looks 10 years ahead	To develop services for the community by forecasting 10 years from now. In the last 10 years, Yamaman improved the facilities for the elderly.

### 3. Financial situation of Yamaman

As stated, Eucalyptus Hills has been developed by Yamaman. So it can be said that the sustainability of Eucalyptus Hills equates to the sustainability of Yamaman's corporate management. Therefore, the financial indices from 2012 to 2018 in Figure 10 are checked.

Yamaman recorded the highest sales of 16.2 billion JPY in 2013, but its turnover was around 10 billion JPY in each of the last three years. Its net profit is also stable and around 0.2–0.4 billion JPY for these 7 years.

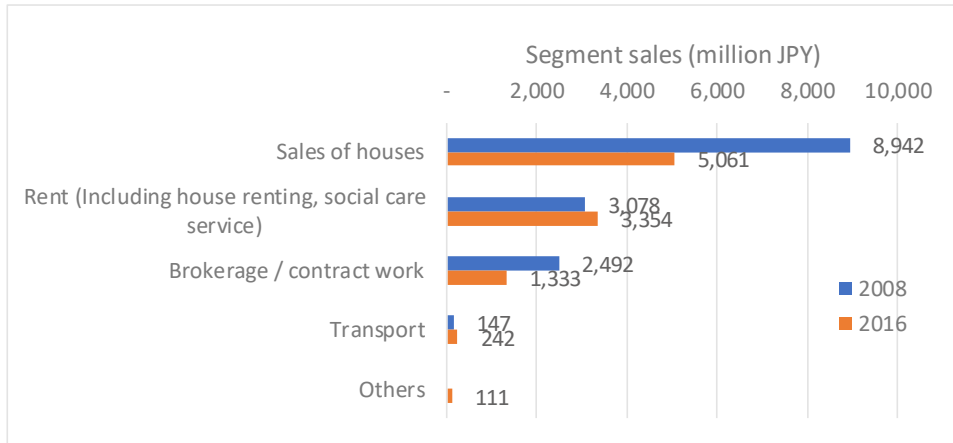
Yamaman provides vertically integrated services, from the housing sales business to living support service after the sales of houses. Because of this, with the maturation of Eucalyptus Hills, the sales composition of the upstream business and downstream business in the Yamaman has also changed (Goda, 2011).



Source: Capital IQ and Yamato Co., Ltd. 61st term financial statement, March 26, 2019 Official gazette

Figure 10 Trend of revenue and profit before tax on Yamaman

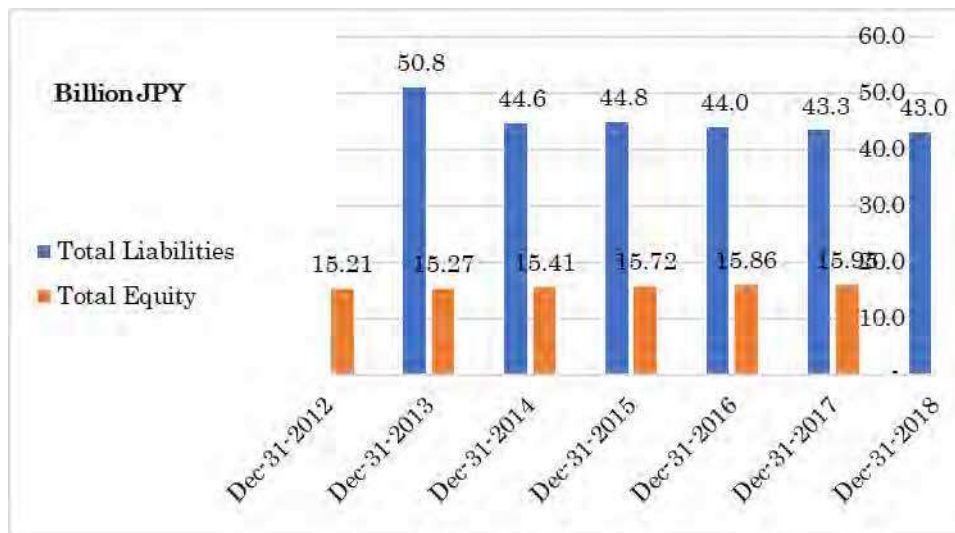
To compare the segmented sales volume between 2008 and 2016 when the segmented sales values are introduced, housing sales in 2008 were around 9 billion yen and 61% of total sales, but they have fallen to around 5 billion yen and 50% of total sales in 2016. On the other hand, house rental income has increased slightly from 2008 to 2016, and has increased from ¥ 3.08 billion (21%) to ¥ 3.35 billion (33%). As the development matures, housing land and home sales revenue is decreasing, and the downstream service ratio is relatively increasing. Since the profit is almost constant, it can be understood that Yamaman, as a community developer, does not have a problem with its sustainability as a going concern.



Source: (Goda, 2011) and Nikkei Corporate Profile

Figure 11 Segment sales of Yamaman

In addition, while the net capital continues to increase, Yamaman has recorded net income every fiscal year, while the liabilities have tended to decrease slightly, and the balance sheet has no major problems.



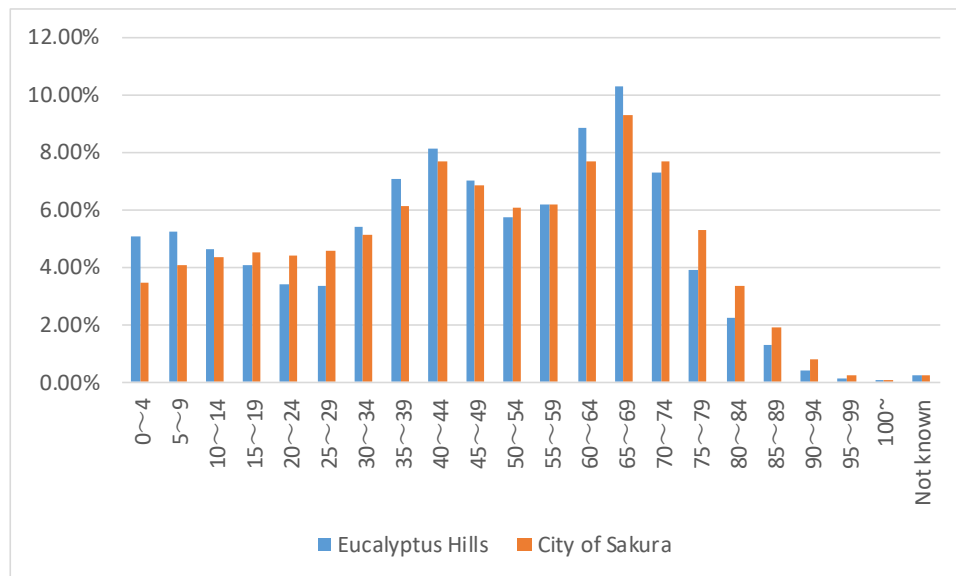
Source: Capital IQ and Yamato Co., Ltd. 61st term financial statement, March 26, 2019 Official gazette

Figure 12 Trend of inventory and total equity for Yamaman

#### IV. Discussion & Analysis

As stated previously, sustainable community management in Eucalyptus Hills means paying attention to the demographic composition balance, including three generations, as well as developing various social, environmental and economic services which will be needed in the next 10 years. In other words, not only maintaining the population, but also keeping a balanced composition of gender and

ages, as well as drawing in young families with children are all elements of Yamaman’s basic strategy. As a result, the demographic composition in 2015 included numbers of residents aged 0–10 years old, 30–44 years old and 60–69 years old that are larger than those in the city of Sakura (Figure 13).



Source: National Population Census in 2015

Figure 13 Comparison of demographic composition between City of Sakura and Eucalyptus Hills

This recovery of young families with children is a critical factor that determines the sustainability of this new town, which is located 40 km from Tokyo. In particular, in Eucalyptus Hills, Yamaman is strategically supplying new housing or renovated housing for young families with children, mainly in districts where the number of primary school children is decreasing (Koutani, 2014).

Although extensive support for children, such as providing nursery schools and schoolchildren’s services, is a relatively common method in Japan’s depopulated areas, inviting in universities and hospitals are also typical efforts to revitalize shrinking cities in Europe and the United States (Pallagst et al., 2019). In Eucalyptus Hills, a university was invited in by Yamaman, but the aim was a little different from these foreign cases. Yamaman expects to improve the quality of life of elderly persons, and job creation is not the main purpose. Eucalyptus Hills is located between Tokyo and Narita airport and the commutable area to those main working areas. Therefore, job creation in Eucalyptus Hills is not a significant factor in this sustainable area development.

Accordingly, this case cannot be taken as a general case for small and medium industrially declining shrinking cities, but as a case more specifically for dormitory towns in metropolitan suburbs.

The development size of Eucalyptus Hills is a planned population of 30,000, and as of April 2019, the resident population is 18,697. Yamaman, as mentioned, provides many living-support services like a nursery, elderly care service, and the development of commercial facilities to enhance the attractiveness of the area through its subsidiaries. As can be seen in Table 3, a wedding hall and paid

caring facilities are generally difficult to locate in the area because of the service area population, but Yamaman has taken a business risk and provides these services to residents.

*Table 3 Population scale of life-support services and service provision in Eucalyptus Hills*

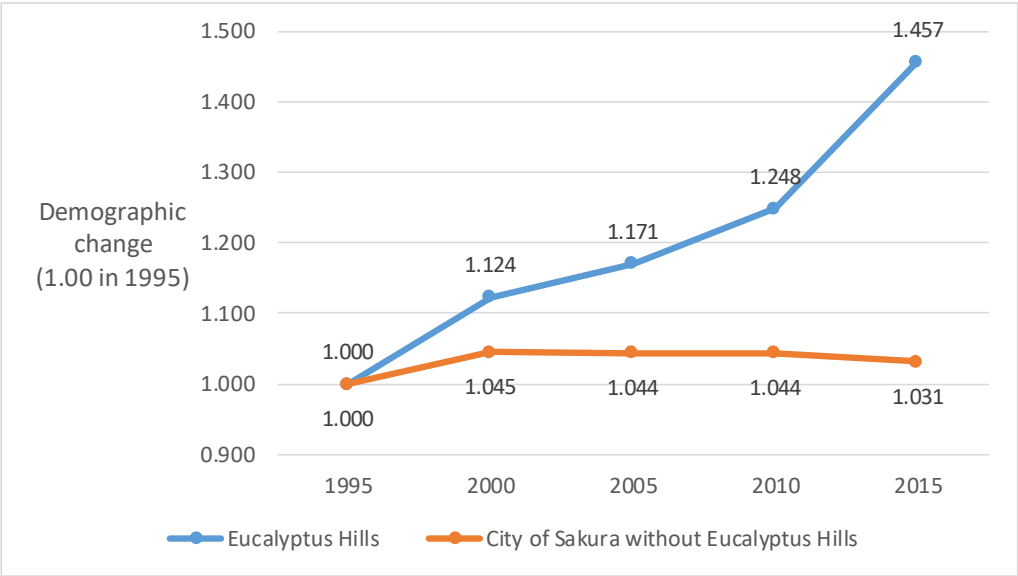
		<b>Population size at which ratio of location of service facility becomes more than 80%</b>
<b>Service facility that can be located on Eucalyptus Hills</b>	Food and beverage retail	2000 people
	Books and stationery retail	2000 people
	Dental clinic	2000 people
	Bar and beer hall	4000 people
	Nursery home care service	4000 people
	Learning acupuncture	8000 people
	Short-stay services	8000 people
	Coffee shop	9000 people
	Bank branch	9000 people
	Music classroom	15000 people
	Game house	15000 people
	General hospital	15000 people
	Long-term care health facilities	15000 people
	Nursery service	15000 people
	Visiting elderly care service	20000 people
Foreign language class	30000 people	
<b>Facilities that are located on Eucalyptus Hills which support population size is exceed the population size of Eucalyptus Hills</b>	Karaoke store	35000 people
	Kindergarten	40000 people
	Fitness club	50000 people
	Paid nursing home	55000 people
	Care treatment type medical facilities	65000 people
	Wedding hall	70000 people
	Shopping centre (sales area over 15000 m <sup>2</sup> )	85000 people

Source: (Ministry of Internal Affairs and Communications, 2016)

Conversely, other services can be located in the area from this perspective of service area population. In short, Eucalyptus Hills is of sufficient size to provide enough services supporting daily living for the residents. In the case of a much smaller development, the residents might have greater difficulty in securing such services. This means that not only a balanced demographic composition, but also a certain accumulation of population in certain spatial spaces are also critical to achieve sustainable development in shrinking cities.

As mentioned above, Eucalyptus Hills is still maintaining its population growth, whereas the city of Sakura has been losing its population since 2000 (Figure 14).





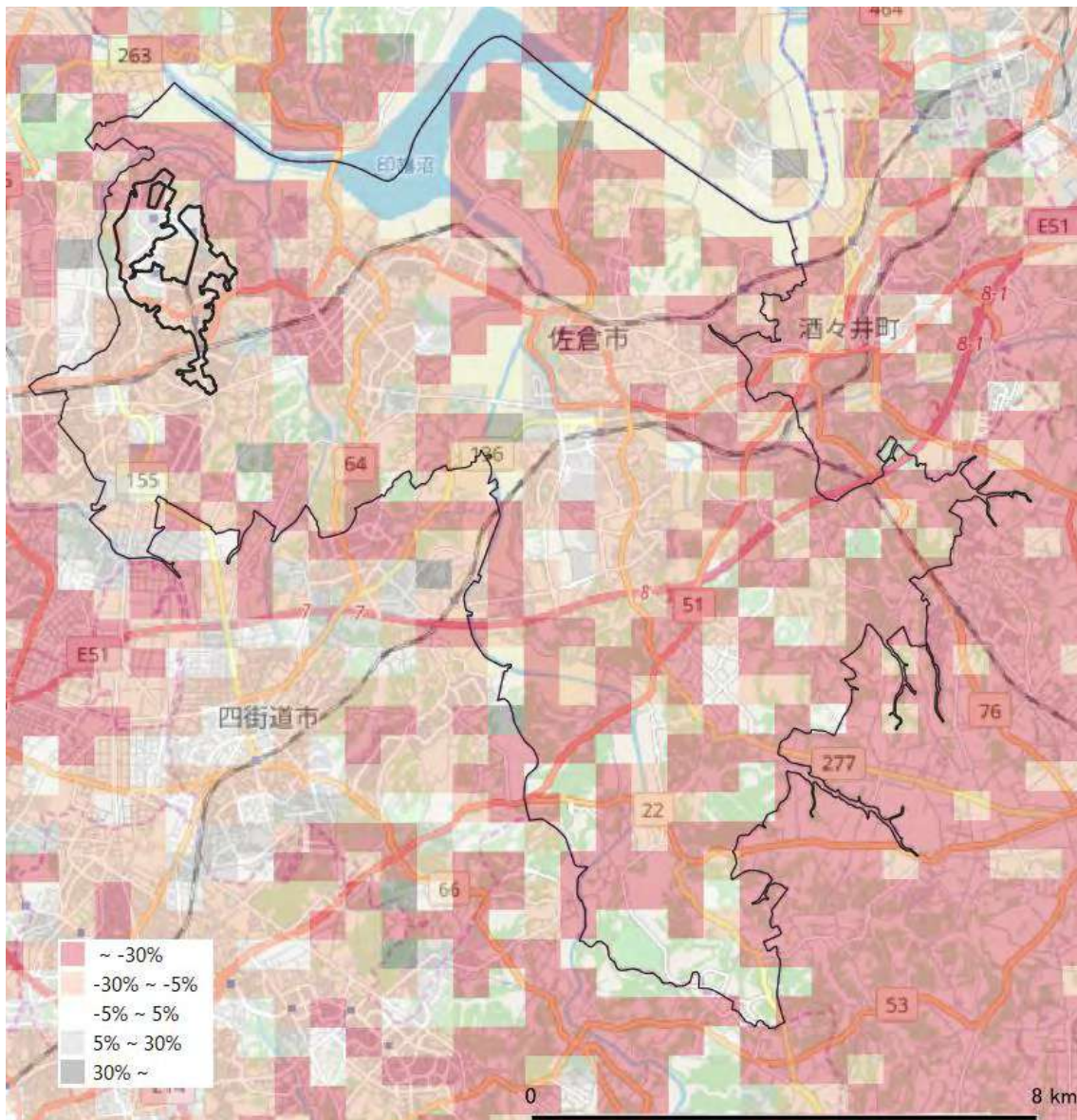
Source: National Population Census each year

Figure 14 Demographic change in Eucalyptus Hills and the City of Sakura without Eucalyptus Hills

This trend is the same for the future. Figure 15 shows the official projected population change rate in a 500 m mesh produced by the Ministry of Land, Infrastructure, Transport and Tourism. The city of Sakura has three big agglomerations of population, namely, Shizu & Eucalyptus Hills, Usui and Sakura. It is natural that the population loss from these agglomerations will be much smaller than in other areas. Of the three areas, Eucalyptus Hills area is losing much less population. Thus, it is firmly expected that Yamaman’s efforts may continue to succeed in the future as well.

Next, the development of facilities for the support of daily living will be conducted not only by Yamaman but also by other entities. However, Yamaman retains the responsibility for commercial facilities management. For example, Eucalyptus Hills Safety First Town was developed by Mycal, which was one of the supermarket stores there in 1992, but closed after opening AEON Town Eucalyptus Hills (Figure 8). Yamaman stepped in to revitalize the vacant Eucalyptus Hills Safety First Town as the facility owner, invited in other tenants, and reopened it as Skyplaza Mall in November 2017.

Although vacant commercial facilities in shrinking cities, even in front of the station, can often become a big negative symbol of the downturn, Yamaman was able to prevent such a situation and keep its usefulness for the residents. This type of business activity links to the business model change of Yamaman as introduced in Figure 11.



Source; National Land Numerical Information Population Projections for individual 500 m mesh (National Spatial Planning and Regional Policy Bureau estimates for 2018) (Shape format data) Data

Figure 15 Total population change rate from 2015 to 2050 on 500 m mesh (official projection results)

## V. Concluding Remarks

The case of Eucalyptus Hills is well known as a sustainable area development. A key factor for it is to maintain the balance of the demographic composition. It also found that continuously bringing in young families with children is especially important for sustainable community development in the suburbs of metropolitan areas. In addition, it is found that ensuring an appropriate population size in the area, namely, 30,000 people as the planned population (although actually less than 20,000 people as of 2019), and some risk-taking by Yamaman to attract customers are additional keys to success. This suggests that not only the balance of the demographic composition, but also a certain level of

accumulation of population within an area is critical for its survival in shrinking cities. Accordingly, 20,000–30,000 people in 245 ha, namely, 8000 people/km<sup>2</sup> on average, is the expected density of population needed for survival.

The uniqueness of this case is the continuous involvement by Yamaman in the development of Eucalyptus Hills for 40 years and the transformation of its business structure in accordance with the progress of the development phase. Yamaman can provide the necessary services considering the change of age structure and family structure in Eucalyptus Hills because it owns commercial facilities<sup>14</sup> and can invite in tenants necessary for providing the services. It can be said that Yamaman and the residents have common interests because Yamaman earns from the needs of residents and this co-interest structure results in improving the attractiveness of Eucalyptus Hills compared with neighbouring dormitory towns.

This case can be applied for dormitory towns located in the suburbs of metropolitan regions where job opportunities are available outside these towns, but three conditions are necessary for the application of the case, namely, a single developer (town manager), a certain size of development (at least 20,000 population with more than 8,000 people/km<sup>2</sup>) and mixed generation living (or long-term development). If these conditions are not met, the following counter-measures are expected.

First, a town management organization rooted in the region, and, if possible, a single entity is needed, and if this is difficult, an organization that is expected to take the initiative will be established. Existing major property companies are good candidates and, of course, a new entity can be established, but the condition is that it should own property like housing land or commercial buildings in the area and that the organization's major sources of income should be from the management of these properties. This co-interest will enable the organization to become a good town manager.

Second, a certain population size (20,000-30,000 people in Japan), which is calculated from the population needing support services to be available for daily living, for a certain density of population (8,000 people/km<sup>2</sup> in Japan), is required as the target for sustainability in shrinking cities. In other words, if some small community cannot aggregate with an adjacent community because of too great a distance, for example, that community may not be sustainable even in the suburbs of metropolitan areas.

Thirdly, if the age structure is distorted because of the short development period of the area, that structure should be adjusted. In this case, the organization mentioned above should try to control the sales target of renovated houses in the area. Targeting of marketing to families with children and the reduction of some real estate brokerage fees are solutions to consider with that aim. These kinds of countermeasures are also considered to be useful for the revitalization of central city areas.

These three conditions should be satisfied at the same time. This is because some new towns like Shiraoka new town in the prefecture of Saitama cannot satisfy all the above conditions. Shiraoka has

---

<sup>14</sup> The first well-known case of new town development in the world was Letchworth, and the developer, First Garden City Limited, also owned its developing lands and rented the property for residents and locators (Himeno, 1993).

undergone long-term development for more than 30 years since the 1980s, with a mixed age structure as well as a single private developer (Sougo Jisho<sup>15</sup>). But this new town has only 4831 people as of 1<sup>st</sup> January 2016, about 1200 houses (planned) and 50 ha. The private developer of Shiraoka is planning to withdraw its town management works (Saitama Capacity Building Wide Area Union, 2017). There is no reason for such a withdrawal, but according to Table 3, the population in the Shiraoka new town cannot support living-support services.

The first new town in the world was Letchworth in the UK. Letchworth also had First Garden City Limited as the specified town developer, and it developed not only housing property, but also utilities like the water supply, gas supply and electricity supply as well as landscape management. Later on, First Garden City Limited lost its function as town manager (Himeno, 1993, 1992), but it can still be said that the existence of Yamaman and First Garden City Limited prove the importance of the presence of a responsible town manager sharing co-interests with residents.

In order to expand this case horizontally, the clustering of new towns might be necessary.

## References

- Adhya, A., 2017, *Shrinking Cities and First Suburbs: The case of Detroit and Warren* (Michigan: Palgrave).
- Baur, R., Oswald, P., Alsop, W., 2006, *Shrinking cities: Interventions* (Ostfildern-Ruit: Hatje Cantz).
- Cohen, S., 2017, *The sustainable city* (New York: Columbia University Press).
- Elkington, J., 1998, Cannibals with forks: The triple bottom line of 21st Century Business. *Environ. Qual. Manag.*, 8, 37–51. <https://doi.org/10.1002/tqem.3310080106>
- Flint, J., Raco, M., 2012, *The future of sustainable cities: Critical reflections* (Bristol: The Policy Press).
- Fujii, T., 2013, Shrinking metropolis: in terms of population migration and generational turnover. *City Plan. Rev.*, 62, 6–11.
- Ganser, R., Piro, R., 2012, *Parallel patterns of shrinking cities and urban growth: Spatial planning for sustainable development of city regions and rural areas* (Oxon: Routledge).
- Goda, A., 2011, Study on sustainable management in New Town - A case study Yukarigaoka Newtown. *Urban Hous. Sci.*, 75–79.
- Hayashi, S., 2014, Creating a sustainable community in the era of population decline - An introduction of the example of the Eucalyptus Hill new town. *Hous. Finance*, Autumn, 32–39.
- Hayashi, S., 2013, A town development based on the practice of Eucalyptus Hill development. *J. Land Inst.*, 21, 110–140.
- Hediger, W., 2000, Sustainable development and social welfare. *Ecol. Econ.*, 32, 481–492. [https://doi.org/10.1016/S0921-8009\(99\)00117-2](https://doi.org/10.1016/S0921-8009(99)00117-2)
- Himeno, A., 1993, The birth of Letchworth rural city corporation - from overtaking to independence. *J. Tokyo Keizai Univ.*, 105–141.
- Himeno, A., 1992, Transition of First Garden City Limited - mainly after W.W. II till taking over. *J. Tokyo Keizai Univ.*, 59–75.
- Hollander, J., 2018, *A Research Agenda for Shrinking Cities, Elgar Research Agendas* (Northampton: Edward Elgar).

---

<sup>15</sup> <https://www.sohgohreal.co.jp/business/house.php> (in Japanese)



- Iwashina, K., 2012, *Who is the leader of the city? Examples of Yamaman Eucalyptus Hill*. Presented at the Next-generation System Study Group, pp. 1–24.
- Katagiri, T., 2009, Local management by people-visited “Yukarigaoka”. *Sustain. Community Dev. Community*. URL <https://blessing.exblog.jp/20633957/>
- Koutani, Y., 2014, An evaluation of residential development in Yukarigaoka - A comparative study with other suburban residential developments - 1–6.
- Ministry of Internal Affairs and Communications, 2016, *Location situation of urban functions*.
- Moore, S., 2007, *Alternative routes to the sustainable city: Austin, Curitiba, and Frankfurt* (Plymouth: Lexington Books).
- Neumayer, E., 2003, *Weak versus Strong Sustainability: Exploring the limits of two opposing paradigms* (Edward Elgar).
- Oswalt, P., 2005, *Shrinking cities: International research* (Ostfildern-Ruit: Hatje Cantz Verlag).
- Pallagst, K., Fleschurz, R., Tetsuji, U., 2019, *Comparing Planning Cultures in Shrinking Cities in the USA, in Germany, and in Japan - Perspectives from Urban Planning on The Re-Figuration of Spaces and Cross-Cultural Comparison*.
- Pallagst, K., Wiechmann, T., Martinez-Fernandez, C., 2014, *Shrinking Cities: International Perspectives and Policy Implications* (New York: Routledge).
- Pearce, D., Atkinson, G., 1993, Capital theory and the measurement of sustainable development: an indicator of “weak” sustainability. *Ecol. Econ.*, 8, 103–108. [https://doi.org/10.1016/0921-8009\(93\)90039-9](https://doi.org/10.1016/0921-8009(93)90039-9)
- Richardson, H., Chang Woon, N., 2014, *Shrinking cities: A global perspective* (Oxon: Routledge).
- Ryan, B., 2012, *Design after decline: How America rebuilds shrinking cities* (Philadelphia: University of Pennsylvania Press).
- Saitama Capacity Building Wide Area Union, 2017, *Aiming at sustainable town - comprehensive town management for super aged society* (「サステイナブルタウン」を目指して-超高齢社会の包括的タウンマネジメント) . Saitama Capacity Building Wide Area Union (彩の国さいたま人づくり広域連合) .
- Uchino, M., 2010, I want Yamaman to go back to the idea of development, “town of miracle, Eucalyptus Hill”-TV programme of “Cambria Palace.” Explor. Tanka Reg. Possibilities. URL <http://dmituko.cocolog-nifty.com/utino/2010/09/post-5ce8.html>
- Wang, Y., Fukuda, H., 2019, Sustainable Urban Regeneration for Shrinking Cities: A Case from Japan. *Sustainability*, 11, 1505. <https://doi.org/10.3390/su11051505>
- Wolff, M., 2018, *Uneven urban dynamics: The role of urban shrinkage and regrowth in Europe*. <https://doi.org/10.17877/DE290R-19066>
- Wolff, M., Wiechmann, T., 2017, Urban growth and decline: Europe’s shrinking cities in a comparative perspective 1990–2010. *Eur. Urban Reg. Stud.*, 25. <https://doi.org/10.1177/0969776417694680>
- World Commission on Environment and Development, United Nations, 1987, Report of the World Commission on Environment and Development: our common future: an annex to document A/42/427: development and international co-operation: Environment.
- Yahagi, H., 2014, *Challenge of “Shrinking cities”*(縮小都市の挑戦) (Iwanami: Iwanami Shinsho).
- Yamaguchi, N., 2016, A study on sustainable suburban residential areas - A case study of Yukarigaoka District. *Dep. Bull. Pap.* 96.