

The alternative development models for Japanese cities provided by Kamakura ‘regional capitalism’ and Kengo Kuma’s Yokodai *danchi* project challenge smart-technology-driven approaches.

Why do you need more towers? Four approaches to sustainable urban regeneration in Japan

Minna Sunikka-Blank and Yumi Kiyono

Japan is an interesting case for examining approaches to sustainable urban regeneration. Firstly, Japan has introduced ambitious programmes to improve the competitiveness of its cities in the global market. In May 2020, The House of Councillors of the National Diet of Japan approved legislation to create ‘Super Cities’. The Super City Program refers to smart urban developments where AI, big data, and new technologies are used to address social challenges such as depopulation, the aging of society, and sustainable energy infrastructure. It also promotes integrated data management and innovations like flying cars or using drones to transport food for the elderly.¹ The new legislation aims to prevent delays in implementing technological innovations in cities.

Secondly, Japanese conurbations have shown us what urban expansion with only minimal restrictions can look like, and what is likely to happen to this fabric when the population peak has been reached. Questions on urban expansion and densification are related to the wider sustainability debate concerning the ‘compact city’ and ‘sprawling city’, or ‘compact city’ and ‘sustainable city’. Urban densification is generally seen to be leading the debate. Yet with some exceptions most studies have focused on Western contexts, with urban densification being used as a strategy to develop sustainable future cities through the compact city model.² The question of whether densifying already dense cities can produce the desired effect forms a significant part of sustainability scholarship.³ Yet adopting the concept in a non-Western context like Japan comes with its own specific implications.

Thirdly, there is an interesting tension in Japanese society between the housing market and demographic trends. Japan is known for its disposable housing market where the average life cycle of a home seldom exceeds twenty years. The rate of new construction exceeds the demolition rate. Newly built homes tend to dominate the property market: over 80% of the housing transactions are of newly built homes, compared to 20% in the UK.⁴ Yet the population has reached its peak and is decreasing even in cities – and so is the demand for new homes.

Furthermore, the consequences of the COVID-19 pandemic could have a significant impact on future urban development in Japanese cities, as demand for office space has started to decline in Tokyo, including Shibuya.⁵ A study conducted during the pandemic in May 2020 in Tokyo and three surrounding prefectures suggests that nearly half (50%) of the residents have considered moving out of the city, compared to 23% in 2018.⁶ The most cited reason for moving to the countryside was its ‘rich natural environment’ but also a ‘good environment for children’. In 2018, the Japanese government announced a scheme where residents of Tokyo could receive three million yen (€24,853) if they moved out of the city.⁷ These developments are likely to increase the attractiveness of secondary cities and move pressure away from the capital cities.

Using case studies, this article explores sustainability from the Japanese perspective, and interrogates how sustainability is interpreted in the context of urban regeneration in Japan. It questions the extent to which urban regeneration, based on densification and verticalisation, is sustainable in the contemporary Japanese context.

The article focuses on two types of projects; the first one concerns new urban developments that are relatively good examples of sustainable design in relation to the utilisation of building technology but have limited spatial or social integration with their context. The second type is based on an urban regeneration model that promotes preservation of building stock and social sustainability. There are four cases in total, two in the first category (Musashi Kosugi and Kashiwanoha) and two in the second (Yokodai *danchi* and Kamakura). Musashi Kosugi is located in Kawasaki, Kanagawa, South of Central Tokyo, and Kashiwanoha in Chiba Prefecture at the border of Tokyo. Musashi Kosugi and Kashiwanoha are based on a high-rise, high-density housing typology. They are both mixed-use developments and include a large shopping mall their the centres with provision of green space at the fringes. Regeneration in Yokodai and Kamakura use the existing building fabric but have lower density. Both

are within the commuter belt: Yokodai is located outside central Tokyo in Yokohama. Kamakura is a small town within a one-hour train ride from central Tokyo. The case studies are assessed in relation to sustainability criteria including socioeconomic targets, conservation of the townscape, and preservation of the existing buildings.

Context

There are several reasons for Japan's 'scrap and build' policy. Oversupply of housing is rooted in the Japanese planning system and overspending on infrastructure. Andre Sorensen argues that the economy has always been the main driver in planning urban developments in Japan.⁸ Government planning interventions have focused on major infrastructure, such as arterial roads, railways, and river engineering, whereas land-use and suburban land development have been relatively unregulated. In the 1960s and 1970s, the state focused on basic infrastructure and left it to private investors to provide housing.⁹

Since 1990, Japan's economic growth has been slowed, but the government continues to protect and give preferential treatment to the construction industry. Ensuring the vitality of the construction sector has been key to the government's employment policy since the Second World War. Kengo Kuma and Yumi Kiyono describe how the liberal democratic party knows that conformism and controlism embedded in the construction industry contribute to vote-gathering for elections.¹⁰ In Japan's national budget for 2020, the expenditure for public works accounted for a staggering 7% (7 trillion yen) of the total budget.¹¹ This public works spending is used for developing facilities such as roads, ports, and railroads, but also houses. The construction industry has profited from this situation enormously. New construction is profitable both for housing developers and local governments. However, developers are seldom asked to contribute to any aspects of social sustainability or placemaking, such as the provision of public space, parks, or streets in this process.

Over the last two decades, 155,000 new dwelling constructions were started in Tokyo each year, compared to 19,400 in Greater London for example, despite the fact that Tokyo's population growth is half that of London's. In 2003–13 the population of Tokyo grew by 0.8%, whereas the volume of the housing stock increased by 1.8%.¹² For every home that is demolished in Tokyo, four new homes are built.¹³ The construction industry and local governments simply cannot stop building houses due to a structural problem where the profits gained from building are used to fund their next developments.¹⁴ In addition, Japan's land policy relies on the privatisation of land: owning a house and the site is a lifelong dream for a worker and has been a key driver in postwar economic development, with long-term mortgages committing workers to their place of work and the same employer.

Consequently, the housing stock in Tokyo has tripled in the past fifty years. The excessive rate of new construction raises questions about the type and

quality of the new houses and neighbourhoods that are replacing these. The postwar housing stock is rapidly disappearing in the Tokyo Prefecture. In 1998, there were 856,000 homes built between 1951 and 1970, but by 2013 this had fallen to 451,000.¹⁵ The housing stock is replaced with high-rise typologies. In 1978, there were 823,000 homes in the Tokyo Prefecture constructed as apartment buildings that were over three storeys high, but within the following twenty-five years this increased to over 3.6 million houses exceeding three storeys.¹⁶ Developers and contractors prefer to build condominium type developments to secure profits and lower risks. Cities like Tokyo have also seen a 'manshon' boom. 'Manshons' are high-end, luxury condominiums for the urban middle classes and investors.

The verticalisation of Tokyo has been facilitated by gradual relaxation of building codes. Due to the risk of earthquakes, the prewar building codes limited building height to thirty metres, but this was abolished in the 1970 revision to the Building Standards Law when the use of steel reinforced concrete, which is more resistant to earthquakes, had become more developed. Consequently, low-rise inner-city sites were developed for high-rise buildings, despite protests from local communities and their concerns of sunshine rights.¹⁷ Wider streets and taller concrete buildings were seen as improvements in fire safety. The 1990s recession encouraged further government spending on construction and the Building Standards Law was changed to allow increased building heights to make redevelopment more profitable for developers.

In a more recent development, an urban regeneration office was established within the national cabinet (under the Special Urban Regeneration Act), which can now designate Urban Regeneration Areas,¹⁸ with eased development regulations and increased Footprint Area Ratios (FAR),¹⁹ avoiding confrontations with local governments that proved problematic in the 1980s. Compared to Western countries, the urban environment in Tokyo is still in constant flux,²⁰ as is also the case in suburban areas which has been influenced by the construction of new infrastructure such as major roads.²¹

Single home construction is also responsible for the 'scrap and build' phenomenon with single homes tending to be demolished and rebuilt with each generation. The short life-cycle expectancy of Japanese homes has meant that there is a disincentive to invest in renovating existing homes. This is partly because second-hand home transactions are considered risky: real estate agents do not usually offer sufficient information on their technical performance. By contrast, developers' marketing materials communicate a positive, glossy image of new build homes, constructed to higher standards approved by building authorities. Local governments have limited regulatory powers to control new developments, and there are few regulations that would protect older buildings that can be seen as fire or earthquake hazards, especially if built with timber.



1 Musashi Kosugi development in Kawasaki, Kanakawa.

While the ratio of elderly population will continue to increase, much of the existing inherited housing stock might not be taken over because families may already have their own house and property inheritance tax is very high. If the house is unoccupied and the plot is not taken over, property inheritance tax can be avoided. Consequently, houses and plots are simply abandoned especially in areas where land value is low.

Oversupply of housing is also driven by population decline in Japan that began nationwide in 2019 and is estimated to impact metropolitan areas like Tokyo by 2025. Japan's total population is projected to decline from 127 million in 2015 to 116.6 million by 2040 and 99.2 million by 2053. The working-age population (15–64 years old) is expected to decline from 75.5 million in 2019 to less than seventy million by 2029 and sixty million by 2040.²²

According to a Housing and Land Statistics Survey in 2013, 8.2 million houses, 13.5% of the homes in

Japan were *akiya* (empty house). This problem is not restricted to low demand areas. In Kamakura, there were 9,630 vacant homes in 2013, with the vacant home rate (the ratio of vacant homes to the total number of homes) rising to 11.8% – up from 9.3% just five years earlier.²³ By 2018, the number of vacant houses in Japan had increased by 3.6% to 8,489,000 with the ratio of vacant houses to the total number of houses rising to 13.6%, the highest ever recorded.²⁴

According to the Nomura Research Institute, one in three Japanese houses will be vacant by 2033 at the current pace of construction.²⁵ If the rate of new build is halved, then this can potentially reduce the vacancy to 23%. It is estimated that over eight hundred Japanese towns will disappear over the next several decades. Eighty-five per cent of the communities in Japan are already decreasing. A concomitant impact in increasing numbers of new build housing could be a drastic fall in the asset value of the existing houses, producing a situation similar



2 Kashiwanoha development in Chiba.

to the Lehman collapse where oversupply is not in line with the actual demand.²⁶

Low birth rate in Japan is a crucial metric that has become a sustainability indicator. In Tokyo Prefecture, despite the fact that 90% of the net arrivals were young (15–29 years in 2014), the area has the lowest birth rates in the country (1.13 in 2013). Saitama, Chiba, and Kanagawa Prefectures are also below the national average (1.31–1.33 in 2013). The reasons are put down to high living costs, long commutes, and Japanese working culture.²⁷ Toshima Ward in Tokyo has been identified as the area with the highest ‘extinction possibility’, based on the rate of decline of the young female population (20–39 years old) in the area in 2010–40, triggering urgent regeneration measures.²⁸ According to the national survey conducted in 2014, by 2040 half of the Japanese municipalities will see the female population of childbearing age (20–35 years old) to sink by more than a half compared to 2010, potentially leading to population decline, a phenomenon that has been termed ‘disappearing cities’.²⁹

The increasing number of house vacancies, coupled with the fact that the recent building stock is now built to last longer, suggests that Japan must reassess its disposable building culture. Yet the regulation of urban development has left very little power to local governments and communities, and Sorensen argues that urban planning in Japan was carried out primarily to foster growth, not to maintain amenities or improve the quality of life in urban areas.³⁰ Also, John Friedmann suggests that the priority in the Japanese planning system has been to create ‘economic space’ instead of ‘life space’.³¹ The new Super Cities Program legislation

continues this top-down approach with its reliance on public-private partnerships for its implementation (for example, Tokyo Gas and Toshiba as partners in Yokohama Smart City, while corporations like Shimizu create roadmaps towards Smart City). Regulatory changes involved in building Smart Cities often require dealing with multiple government agencies, but the top-down legislation ensures there are no complications at the local level. However, if sustainability is understood to include measures beyond technical innovations then regeneration developments need to be assessed within a wider socioeconomic framework.

Methodology

This article brings social sustainability, green space, and mixed-use development alongside more traditional understandings of environmental sustainability criteria, such as minimisation of energy consumption, resistance to disasters, circular material economies, waste reduction and access to public transport. In this study, sustainability is understood to include socioeconomic targets, conservation of the townscape, preservation of the existing buildings, control of car use, and support for local businesses and local community.

It is worth stressing here that by sustainable regeneration we mean sustainable strategies for both people and the environment in the long run. This implies balancing competing factors and avoiding ideological emphasis on just one or two chosen elements. The factors we find essential are: reducing non-renewable energy consumption, mitigating environmental damage, sustaining social sustainability and health, keeping homes affordable, and retaining architectural heritage.³² As low birth rate is an important factor affecting Japan, the adaptability of the development to the changing needs of families and young women is included as criteria for social sustainability. It is suggested by the OECD that this should cover affordable housing, sufficient childcare and school provision, and promoting mixed-use urban developments.³³ It should be considered from the outset that the definition of sustainable urban regeneration differs in Japan. This can be seen, for example, in the application of the term ‘brownfield’. The Japanese perception of brownfield can carry a negative connotation with less interest to develop these sites, which is reinforced by a lack of policy drivers and general environmental awareness.³⁴

Japanese policies for sustainable buildings are focused on energy. The Tokyo Metropolitan Government (TMG) has ambitious targets to be net zero in carbon emissions by 2050. The Carbon Reduction Reporting Program applies for small- and medium-sized commercial and industrial facilities and since 2010, under the Tokyo Metropolitan Government Emissions Trading Scheme (ETS) and Cap-and-Trade Program, large buildings are required to reduce emissions below a facility-specific baseline (usually around 25%). The TMG Green Building Program requires that for all new and extended buildings exceeding 5,000 m² in total floor area,

including condominiums, environmental plans must be submitted.³⁵ However, all three TMG polices focus on energy and zero carbon emissions but they do not address socioeconomic targets, social sustainability, or conservation of the townscape, primarily because they have been designed for new build developments.

The selection of the case studies was preceded by literature review and a pilot study. The pilot study focused on sustainable urban regeneration models in the UK. The pilot study included expert interviews and case study visits in London and Cambridge. In comparing these contexts and approaches it helped to identify gaps in the Japanese policy and determine indicators and case studies for this research. The pilot study also included preliminary visits and interviews in Musashi Kosugi and Kamakura.

As most studies tend to focus on inner city developments within Tokyo, it was important to us that the case studies selected in this study represented examples from the fringes of the city. This research sympathises with Jennifer Robinson's concept of ordinary cities.³⁶ She argues that all cities are assembling and inventing diverse ways of being modern and there is potential to learn from the academic analysis of other, non-Western contexts and secondary cities.

Musashi Kosugi and Kashiwanoha developments were selected as examples of high-density, high-rise housing developments. Kashiwanoha is developed by Mitsui and Musashi Kosugi involves several developers. Both Musashi Kosugi and Kashiwanoha are commercially successful developments that have a high occupancy rate. They were selected based on the representativeness, material available for the study, accessibility to the site and the assessment conducted in the pilot study.³⁷ Kashiwanoha epitomises the Smart City paradigm incorporating technological innovations such as an Energy Management System (EMS). Both Kashiwanoha and Musashi Kosugi are recent developments, still partly under construction and little documented.³⁸

It was more challenging to find examples of community-based regeneration. Kamakura's historical buildings have been well documented but there has been little attention given to the community-led regeneration aspects. Material on Kamakura was collected in interviews with local residents and entrepreneurs. Yokodai *danchi* was selected as an example of sustainable renovation and judged as a representative case of the typology. The research and the site visits took place in summer 2018. The research was hosted at Keio University School of Design and Management (SDM) in Hiyoshi.

High-rise: Musashi-Kosugi and Kashiwanoha

Musashi Kosugi was developed on an industrial brownfield site. It is a prime example of urban densification: the construction of the new development started in 2007 and has led to an increase of 25,000 inhabitants in the case study area. Musashi Kosugi is a prototypical development comprising twenty-three condominium towers that are over 60 metres in height, including sixteen

towers over 100 metres in height. It is located on a 100-hectare site close to Musashi Kosugi Station that has excellent connections to Narita airport and the central Tokyo. When asked about their reason for choosing Musashi Kosugi, the inhabitants mainly said 'convenience to commute', which is reflected in the large discrepancy between daytime and nighttime population numbers on the site.³⁹

From a sustainability point of view the development has clear credentials: external connectivity, minimisation of energy consumption, and resistance to disasters. In the pilot study, the development scored less well in relation to access to the natural environment, generation of renewable energy supply, and the proportion of young female population that is less than 40%,⁴⁰ compared to the national average of 51%. The demographics are dominated by couples in their thirties and forties with small children. There is a shortage of schools but also a risk of ageing inhabitants that could materialise in the next thirty years as family demographics change.

Although the Musashi Kosugi development was led by Kawasaki City, each developer was allowed to set up their high-rise towers separately on the former factory site. Consequently, the overall development does not reflect the character, grain, and typology of the surrounding area. The disparity between Musashi Kosugi development and the neighbouring context particularly around the interfaces between the new and existing neighbourhood, where the edge conditions are treated with indifference [1]. As in many developments, a mall is located at the heart of the development, interrupting the external street pattern, and it lacks functions and spaces that would activate its edges and the public realm. Public space provision, such as the mall roof, is supervised with access to this being controlled by the owner.

The design prioritises easy maintenance and convenience and there is little tolerance for embracing pluralism or organic diversity that is intrinsic to the surrounding city. The Japanese word for clean (*kirei*) can be understood to include beauty and the value of cleanliness in the Japanese society is well known,⁴¹ visible in trimmed trees and concreted river beds and hills in Japan. Yet there is a risk that after the first impression, Musashi Kosugi's tidy, even sterile, urban environment could be perceived as dull, unstimulating, and lacking any feeling of community. Developments like Musashi Kosugi appear as exaggerated vertical versions of Western commuter towns built in the 1960s and 1970s; examples of the danger of how limited demographics and lack of services can slide areas into low demand and ageing populations in the future. These new developments are not necessarily resilient in the property market: if there starts to be a downward spiral in housing prices in the area (especially if there is oversupply of dwellings in new towers restricting any resale market), the property values can crash. The recent boom in tower condominiums in Tokyo has already started to cool down due to their vulnerability to disasters. In the 2019 typhoon, the underground electrical system in



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a tower in front of Musashi Kosugi Station was flooded, causing power and water outages, and as a result the property prices were expected to decline.⁴²

Kashiwanoha development in Chiba Prefecture is well connected with public transport and is within a thirty-minute train ride from central Tokyo [2]. Kaswihanowa is designed as a Smart City. This is often translated to three key urban development concepts: environmental symbiosis (including disaster management and Area Energy Management Systems), health and longevity ('where all ages can live a safe life'), and new industry creation. Smart Cities establish IoT (Internet Of Things) with city infrastructure management systems, including smart grids, visualising the information to residents (HEMS), water management systems, EVs, and greener buildings. Smart City is seen as a technology-oriented approach to experiment and showcase integrated advanced technologies. Alongside creation of environmental and economic value, one objective is social value, which can be translated in general terms to ageing society, disaster management, health and medical care, childcare, and education.⁴³

Kashiwanoha has an advanced, energy district distribution system with heating/cooling exchange between buildings, large PV supply, and large-scale battery storage capacity. The social sustainability objectives for the development include innovative shared workplaces (for example, Koil collaborative space), free health monitoring and advice service centre for inhabitants, and new retail concepts such as T-site, a highly successful book-store model by Tsutaya.

3 UR *danchi* in Yokodai, Yokohama.

Kashiwanoha is referred to as a campus development but it includes only one faculty building (Kashiwanoha Urban Design Center). In the UK, universities are increasingly embedded in urban developments as cultural anchors or science and technology hubs – seen as 'sleeping giants of place-based leadership' or 'planning amateurs'.⁴⁴ For example, North West Cambridge (Eddington) is Cambridge University's £1 billion new development consisting of homes for keyworkers, graduate units, and market homes, with emphasis on creating a local community that will be built gradually over the next fifteen to twenty years, the costs being divided 40:60 between the developers and the university.⁴⁵ As Japan has a very high number of universities, some struggling financially to survive, they could be given a more active role in place making – but this is not yet fully developed in Kashiwanoha.

Musashi Kosugi and Kashiwanoha are an economically efficient model for developers, who after the completion, do not have to take any responsibility for the management and further upkeep of the development. All risks related to the maintenance and management are passed on to the community and the residents. A major issue in these new developments is the lack of developer obligations that would offer sufficient level of variety in master plan, architecture, or contributions to parks or streetscape. Large commercial developers

are basically unconstrained by planning. In Tokyo, based on the City Planning Act, the Tokyo Metropolitan Government and Ward Office can approve the relaxation of regulations (including FAR) but while plans need to be discussed by an urban planning council, they seldom undergo any significant changes as they have already been agreed on between government officials and developers in advance consultations. For example, in the case of the Toshima Ward Offices, close to Ikebukuro Station, the FAR for the site was raised from 300% to 800% to attract private developers and encourage the developer investment to build the high-profile, albeit a sustainable, condominium tower. This reciprocal relationship between the government and large construction conglomerates is critical for the economic realisation of these developments as previously discussed.

Preserving the existing fabric: Yokodai *danchi* and Kamakura

Danchi represents a large body of modernist postwar housing developments in Japan that were built as public housing for government workers after the Second World War. While the Tokyo Prefecture *danchi* housing is rapidly decreasing,⁴⁶ there is potential in this type of stock that has been largely forgotten. *Danchis* were built as public housing for government workers. They are characterised by sober, modernist housing design, typically three to ten storeys high, with white façades and open green spaces between the buildings. Most *danchis* were built during the period between 1958 and 1968, but their construction continued at a reduced rate until the 1980s. They are owned and managed by Urban Renaissance (UR) agency. UR was established in 1955 but has recently seen a decline in its economic power compared to



4 Yokodai *danchi*.

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5 Typical street in Kamakura.

6 'Home restaurant' in Kamakura.



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commercial developers. UR currently manages and operates approximately 1,700 housing complexes whose units account for 740,000 rental properties.⁴⁷

In postwar society, *danchis* provided a concept of modern housing, based on a nuclear household model rather than traditional extended families. They contained modern kitchens at the core of the

unit and represented an ideal of a contemporary, more Western-based lifestyle. Some co-operatives that activated housewives, especially in civil servant *danchis*, have been linked to the women's liberation movement in Japan that took place in the 1970s–1990s.⁴⁸ *Danchis* offered modern, communal forms of living that facilitated social networks between housewives where new ideas could spread and where initiatives for local food production as a reaction to environmental problems emerged.

Today *danchis* are still remarkably well maintained by the inhabitants but they suffer from similar factors as their Western counterparts: small apartment sizes and low-demand locations that expose them to the threat of demolition. Residents are ageing and it is estimated that 30% of the inhabitants are now over sixty-five years old,⁴⁹ with one key challenge being to make them more attractive to a younger population. Yet the scale and density of *danchi* sites offers welcome middle ground in Tokyo; in between a high-rise typology and single-family houses. They also offer semi-public green space, a rare commodity in these hyper-dense cities. Unlike the spaces afforded in high-rise towers that have closed circulation cores, *danchis* have long access galleries that offer visual connections and space for social interactions.

Yokodai *danchi* is located twenty minutes by train from Yokohama and within one hour from Tokyo, and has 25,000 residents in 11,000 households, with eight-three buildings, in 200 hectares of land, managed by UR. The first residents moved to the complex in 1970. Architect Kengo Kuma's renovation project has been intended as a facelift to improve the attractiveness of the area. It is part of the 'Future of Housing' project, a joint venture between UR, Kengo Kuma, and Kashiwa Sato who is a Creative Director in charge of branding the area. The renovation included an elevated plinth for shops and communal facilities, new community space and a light-touch treatment of the façades, which respected the qualities of the existing buildings [3]. The side elevations have been painted with stripes evocative of trees to soften the edge of the development [4]. The renovation is supported by other regeneration measures, such as Yokodai station area renovation, improvement of the local streetscape, and social measures such as facilitating intergenerational meetings between the residents.⁵⁰

It is often forgotten that renovation measures have clear universal sustainability credentials over new build. High embodied energy associated with new construction can be up to 15% of the energy used in a one hundred-year-old building.⁵¹ There are further arguments to be made related to social sustainability, place making, and preserving the local community. If *danchis* are to keep their social function, one option would be to transform them into social or subsidised housing – their role as affordable housing offering a communal, progressive way of living could be reinvented.

In Kamakura, a historical seaside town within a thirty-minute train ride to Yokohama and sixty-minute train ride to central Tokyo, another interesting example is emerging in which bottom-up, community-led regeneration approaches have been developed with minimal interference to the urban fabric. Kamakura has around 170,000 inhabitants, and its location between green hills and the sea protect it from urban sprawl creeping in from the North. Kamakura is attracting a younger population who are looking for an alternative lifestyle and better work-life balance. This has led to the emergence of small enterprises and an unlikely base for high-tech start-ups. Yet Kamakura has kept its small-town ethos and, so far, avoided large-scale developments [5].

Due to a number of high-tech start-ups, Kamakura is sometimes referred to as 'Kamacon' – referring to Silicon Valley. Where normally these tend to be located in characterless business parks, in Kamakura companies are drawn to the city exactly because of the quality of its historical urban fabric and its community. Some have reappropriated historical Japanese houses and let their architectural features shape their workplace practices. Hackathons have been hosted in Buddhist and Zen temples. These 'Zen Hacks' are two-day events where ad hoc teams of designers and engineers get together to design and build new versions of IT applications and platforms on chosen themes like zen, garbage, or food. In

addition to these events, public 'Kamacon' meetings are regularly held in the City Hall where new initiatives are discussed between newcomers and existing residents: the local community, including small businesses and social enterprises. 'Kamacon' meeting topics vary from brainstorming sessions to film festival screenings. Newcomers can suggest what they would like to do in the neighbourhood. If the old residents agree, the ideas can gain momentum and cloud funding is used to obtain start-up finance.

The thinking behind the Kamakura model is regional 'Kamakura capitalism', advocated by Daisuke Yanasawa who is a CEO of Kayac Company. Kayac has the head office in Kamakura and it is listed in the Tokyo Stock Exchange. They cover business models from real estate to funeral service, recruiting and immigration support, but produce digital contents as the core business. Yanasawa's reason for choosing Kamakura as a base was also from personal experience of living there during his childhood. Since founding the company twenty years previously, Yanasawa has been searching for new indicators for regional capitalism that could replace GDP in the measurement of wealth and progress. His concept of regional capitalism is not only focused on economic profit but aims to balance three aspects: regional economic capital (financial resources and productivity), community capital (human connections and social capital), and regional environmental capital (nature and culture).⁵² In practice, this means implementing new communal facilities for enterprises and the local community in Kamakura. Nursery schools and employee cafeterias are often feasible only in large companies, but the local community and entrepreneurs have launched two spaces: 'Our Nursery School in the Town' and 'Our Canteen in the Town', both public facilities that are used jointly by local people and new entrepreneurs in the area.

Kamakura 'regional capitalism' has led to the revitalisation of the region and attracted independent businesses with emphasis on locality and organic food.⁵³ Unlike in Europe where planning zones are strictly regulated, and reprogramming residential areas can be considered disruptive, lenient regulations in Japan allow for the establishment of restaurants, bars, shops, or offices in private homes [6]. In Kamakura this has led to a diverse, surprising, and idiosyncratic environment. There are 'home restaurants' that are run by the entrepreneur in order to minimise fixed expenses and adjust to their personal working patterns ('work by my pace not market pace'). There is little attention on advertising or signposting as they are meant for locals, away from tourist hot spots – capitalising on local 'knowledge'. There is a strong element of self-build and transformation of warehouses by entrepreneurs themselves to keep the costs low, which results in lighter touch, more sensitive interventions in the existing buildings.

The question is how to scale up the 'Kamakura effect' without it becoming the victim of its own success. Yanasawa suggests that projects on local production and community support in Kamakura

are applicable nationwide. He argues that while twentieth-century capitalism was determined by 'what to do', twenty-first-century 'Kamakura capitalism' wants to switch this order and ask first 'with whom' and 'where', and from there 'what to do' emerges.⁵⁴ According to Yanasawa, in Kamakura the local government office really listens to the opinions of the citizens, which is unusual compared to other suburban areas in Japan. There are also other success factors. Kamakura is an ancient city, residents are proud of their area and it is ranked the seventeenth wealthiest community in Japan.⁵⁵

However, there are also risks with this approach. In city planning the preservation of wooden buildings is promoted and there is a height limit so that tall towers cannot be built around Kamakura Station.⁵⁶ However, gentrification means there is already pressure to protect Kamakura Market next to JR Station from market-led development. As Kamakura regeneration is dependent on the community lead, it may lack continuity and power against more centrally coordinated developments if a top-down policy is imposed. Even so, Kamakura can offer one model of how countries like Japan can negotiate their way through post-industrial challenges, turning attention to ethical implications, local community, and supporting the 'creatives'⁵⁷ – especially when the younger generation might not always see the commitment to a company and life-long mortgage as a desirable future.

Conclusions

This article described four case studies of sustainable urban regeneration in Japan: two high-rise, high-density developments using new building technology (Musashi Kosugi and Kashiwanoha) and two renovation-based approaches including measures of socioeconomic sustainability (Yokodai *danchi* and Kamakura). The cases demonstrate that the interpretation of sustainable urban regeneration in Japan is diverse – although dominated by the first approach.

If we see sustainability through the lens of compact cities and urban densification, then Musashi Kosugi and Kashiwanoha may be seen more favourably in terms of efficiency and economic return on investment. However, to better control over-development and development quality, including socioeconomic sustainability, in these types of new developments, planning requirements should include direct developer obligations, such as the 'S106' clause in the UK Town and Country Planning Act. This has been used to allocate means for local authorities to negotiate planning obligations with developers when granting planning permissions to offset the impact of new development.

Kengo Kuma's Yokodai *danchi* renovation clearly demonstrates the potential of the existing postwar housing developments to provide a mid-density and socially sustainable layer to the city, from an era that is increasingly erased to make way for high-rise towers. *Danchis* are already responding to societal changes in Japan by accommodating the increasing

share of foreign immigrants and creating a multicultural neighbourhood.⁵⁸ It is acknowledged that encouraging renovation over new build goes against the current policy and prioritising the 'economic space':⁵⁹ renovation is less profitable than new build and will need government incentives.

Kamakura's alternative regeneration model is based on shared community initiatives between the local government, entrepreneurs, and the residents. It allows independent businesses to be set up in homes, enabling the neighbourhoods to grow organically and into mixed use, materialising social sustainability and the characteristics of an 'open city'.⁶⁰ Further research into Kamakura 'regional capitalism' could identify factors that enable links with locals and newcomers and feed into an idiosyncratic environment where new forms of enterprise and living are allowed to emerge.

It should not be ignored that urban regeneration is often driven by densification. In Musashi Kosugi, the current population of thirty thousand inhabitants is inhabited in an area of 56.7 hectares, whereas in Kamakura's low-rise typology the space demand for the same amount of population is close to five hundred hectares. In Yokodai, a population of twenty-five thousand is housed in two hundred hectares of land. This makes the population density in Musashi Kosugi nearly ten times higher than in Kamakura and five times higher than in Yokodai. However, Sorensen argues that the approaching population loss in Tokaido calls for more attention to flexible urban structures that can be removed or redeveloped after the population peak is past.⁶¹ This adds more incentive for repurposing historical infrastructure and brownfield sites. Musashi Kosugi and Kashiwanoha are built by developers who are incentivised by high density and their view of sustainability is determined by environmental assessment metrics like CASBEE that can be used in marketing to incentivise increased house sales. Social considerations are restricted to health (as in Kashiwanoha residents' health centre that offers measurement of blood pressure or weight by volunteers). Public spaces are earmarked for specific purposes and supervised. Further, if Kamakura and Musashi Kosugi are both in equally high demand in the housing market (the average house price in Musashi-Kosugi was 3.1 million yen per 3.3 m² and 2.9 million yen per 3.3 m² in Kamakura in 2018), the question arises to what extent are local governments and communities able to capture some of this increase in value to create improved environments? The singularity of typologies such as Musashi Kosugi and Kashiwanoha makes them economically and spatially inflexible. Future proofing the design of such typologies could improve their long-term viability for example of being able to dismantle or reappropriate top floors of a residential condominium tower.

Considering the changes in the society and the housing market, the concept of sustainability in urban regeneration in Japan should be expanded beyond technical innovations to include

programmatically and physical flexibility of the urban fabric, and the preservation of the local community and the existing buildings. If we then include the demands of families and young women as part of the sustainability criteria, this needs to be facilitated by affordable housing, sufficient childcare provision, and mixed-use urban developments. It is therefore

important that the government's new visions, such as Super Cities Program, should not restrict the vision of sustainable future cities to new build. Further, the case studies suggest that urban densification, the compact city model and sustainability should not be taken as synonyms in post-COVID and post-population peak society.

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The authors declare none.

Authors' biographies

Minna Sunikka-Blank is Associate Professor in Architecture and Urban Studies at the Department of Architecture at University of Cambridge. She is Director of Studies and Fellow in Architecture at Churchill College, Cambridge.

Yumi Kiyono is Research Associate at SDM Institute at Keio University and freelance journalist covering urban design, local communities, and changing lifestyles in Japan. Her works include *Shin Toshi Ron Tokyo* (Study on Tokyo) with co-author Kengo Kuma.

Authors' addresses

Minna Sunikka-Blank
mms45@cam.ac.uk

Yumi Kiyono
yumikiyono@sky.bbexcite.jp