
National Grand Design and Spatial Policy in Depopulating Period

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Abstract

Recent Japanese demographic change can be characterized in two aspects; 1) decrease of the national population which is the first case after WWII, 2) in parallel, aging of the average population and decrease of average family size. The demographic change of a nation is said to shift from “high birth rate and high death rate” to “low birth rate and low death rate” via “high birth rate and low death rate,” in conjunction with economic and medical development, and the time lag resulted in the upside-down triangle of population pyramid. Japan is recently mostly characterized by the low birth rate especially after the 1980s. Taking look at the demographic shift in modern age, migrations from rural villages to urban cities and from smaller to larger cities are dominant at the national level with rare exception during war times, generating under population and excessive concentration problems especially during rapid economic growth period. Superiority of Tokyo, the capital, is recently increasing, emerging tendency of excess concentration of population and industry in the Metropolis.

Correspondence of Japanese housing and urban issues and policy to its demographic change can be seen in 2 ways. Firstly, Japanese cities accepted most of urban migration in their suburbs. After some decades of twists and turns, our planning

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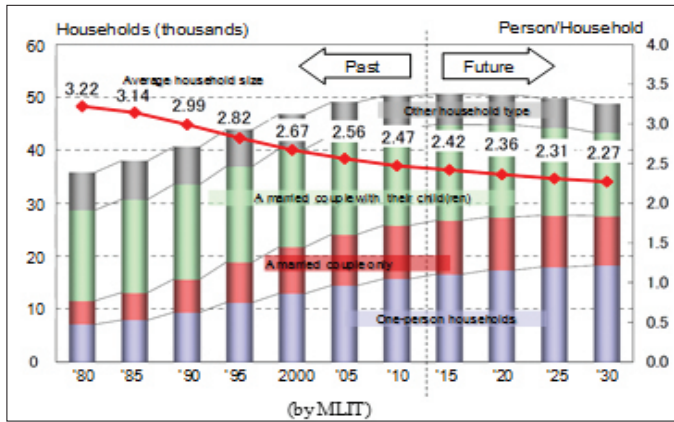
system reached to Area Division System of Urbanization Promotion/Control Area and Development Permit System, although some tune-ups adjustments still had to take place. Even after the cease of population increase, increase of floor area per capita by decrease of family size and etc. were the main driving factor for urban expansion, and motorization also in local cities and towns. Secondly, the “demographic bonus” and the opposite “demographic onus” by the up growth tide of baby boomers generated different urban housing issues such as construction of low level wooden rent housings and creation of hazardous region against urban fire, development of suburban new towns, emergence of vacant housing problems and etc.. We still have to see what the recent demographic change will actually bring out to our urban and housing policies.

The issue of population decline and aging in Japan is accepted as decline of working and spending population issue economically, sustainability issue of our social security system, and in spatial planning sustainability issue of communities in small villages, suburban residential districts and condominium buildings. Some national and non-profit institutes try to draw out our future taking particular note of spread of non-resided areas in our territory, or unsustainable local communities within both rural districts and metropolis where young women tends to move out.

Our “Grand-design of National Land” declares to cope with depopulation and aging issues mainly in 3 directions. Firstly, by substantive increase of production and consumption population by social participation of women and aged populations who otherwise are blocked out. Secondly, by maximum application of information technologies in geographically constrained areas. Lastly, by formation of compact hubs and networks system, to provide urban dynamism, public and private services throughout the nation, and reduce their costs. The weight and directions varies by such as the size of the city.

and then dropped again to the lowest-ever level 1.26 in 2005.

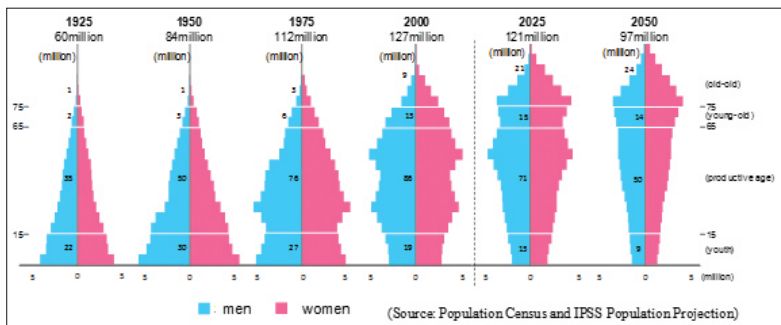
Figure 2: Household Transition



source: Population Census and IPSS Household Projection

Figure 2 shows transition of household numbers and household-type compositions of Japan. The overall number of households is still growing and projected to reach its peak in 2015, because of lowering average household size. The household type of married couple with their child(ren) which used to account for the largest proportion, gave place to one-person household type in 2010 due to exceeding aging society, and increasing percentage of unmarried eligible people. These phenomenon overall, accounted for the decrease of average household size, which was over 3.0 until 1985, and is now lower than 2.5, even below 2.0 in large cities.

Figure 3: Transition of Population Pyramid



source: Population Census and IPSS Household Projection

Figure 3 shows the transition of population pyramid in quarter-century intervals, from 1925, including future projections. It is generally said that, along with economic and medical development, the demographic change of a nation shift from; the first stage “high birth rate and high death rate” to, second stage “high birth rate and low death rate”, and, the final stage “low birth rate and low death rate” situation. Japanese society has undergone the three stages very rapidly and as a result, the orthodox triangle pyramid which can be seen until around 1950, will turn upside-down in one century. Today, it shows a so called “bottle shape”.

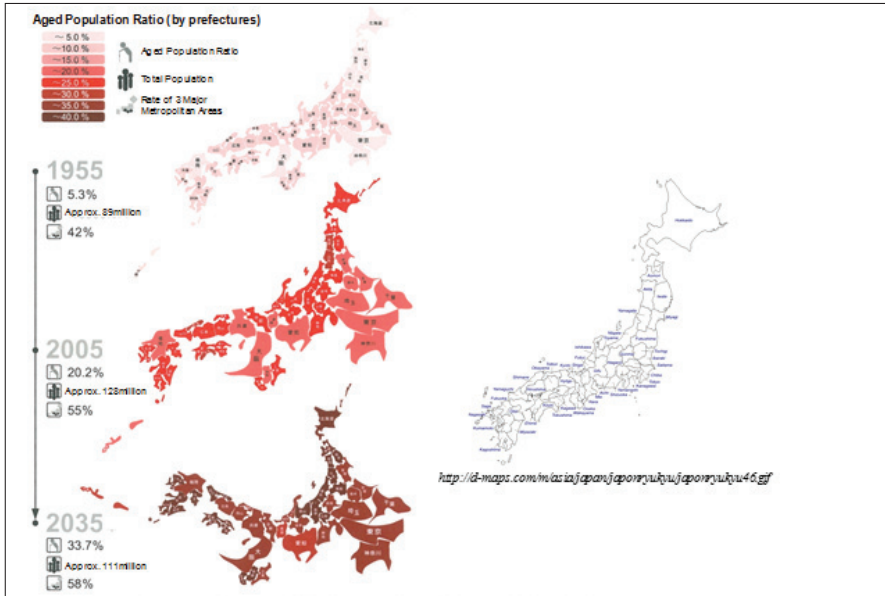
Taking look at the emergences and transition of baby-boomer generations, the 1st baby-boomer generation peak after WWII can be found at the bottom of the pyramid of 1950, after WWII, and the 2nd baby-boomer generation peak can also be seen at the bottom of the 1975 pyramid. However, there are hardly any signs of the 3rd baby-boomer generation; it seems to be “vanished” around 2000 because of low birth rate.

Focusing on the transition of several age-group populations, youth age-group (0-14yrs) population after around 1950, is declining. Productive age (15-64yrs) population, increased with the development of the social economy and reached its peak around 2000 when the 2 baby-boomer generations were involved, and is now on the down slope. Old age (65yrs-) population is, of course increasing; young-old age (65-74yrs) population seems to be stable for several decades after 2000, whereas old-old age (75yrs-) population seems to be now fundamentally increasing.

Migration across the country borders are irrelevant to the overall population trend in Japan, so far after WWII, as we only accept immigrants in exceptional cases. However, demographic shift among the regions of Japan, of course, has been important when regional population trends are discussed. During modern age, generally, migrations from rural villages to urban cities and from smaller to larger cities, especially to 7 metropolitan areas, are dominant with rare exceptions during the war times. Such migrations generated depopulated district problems and excessive concentration problems, especially during rapid economic growth period. Recently, under the

development of economic globalism, superiority of Tokyo the capital is increasing, emerging tendency of excess concentration of population and industry in the Tokyo Metropolitan area.

Figure 4: transition of population map



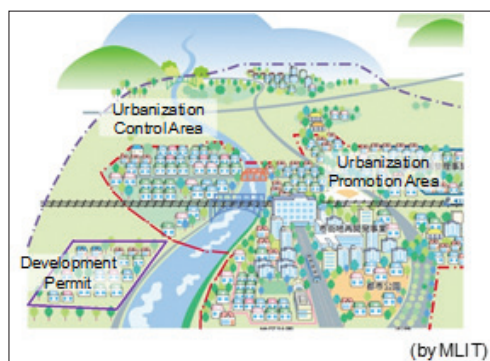
source: Hidetoshi Ohno + Avant Associates(2008) “Shrinking Nippon” Kajima Publishing Co.

Figure 4 shows the transition of population map of 47 Prefectures from 1955 to 2035, showing previously mentioned trend. Prefectures which attracted many people by 1955, namely the 3 metropolitan areas, seems to have continued increasing until 2005. Aged population ratio transition can also be seen, from the same figure Population decreasing local prefectures are expected to increase the ratio even higher in 2035 than in 2005. However, 2 major metropolitan areas around Tokyo and Osaka also increase the ratio, and quantitatively, aging society in these metropolitan areas are expected more seriously in the future

1-2. Urban Issues and Policies Corresponding to Demographic Change

The correspondence of Japanese housing and urban issue and policy to its demographic change in the past can be seen in 2 ways; “urban expansion” and

Figure 5: Urbanization Control System



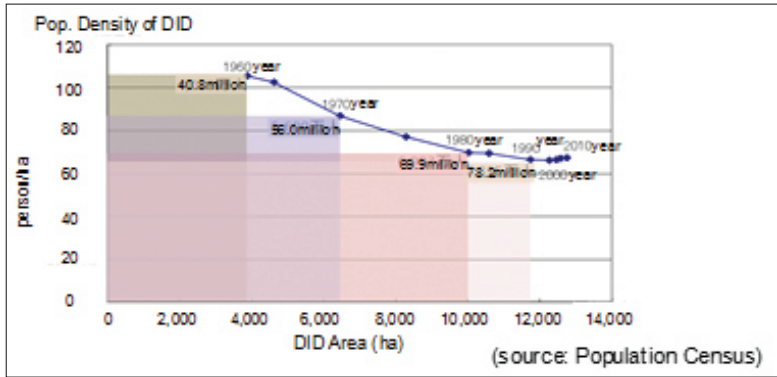
“demographic bonus/onus”.

Firstly, during the rapid economic growth period, Japanese cities accepted most of urban migration in their suburbs, and considerable amount of offspring generations chose to live in suburbs instead of traditional living style with their parents. These movements caused drastic urban expansion and sprawl of disordered suburbs. After some decades of twists and turns, our city planning system reached to Area Division System by the City Planning Law, in 1970, consisting by Urbanization Promotion Area, Urbanization Control Area and Development Permit System as shown in Figure 5. Developments were supposed to take place mostly within designated Urbanization Promotion Area and individual areas under Development Permit, thus controlling urban sprawl and preventing development without sufficient infrastructure provision. However, as for urban expansion, even after the cease of population increase, increase of floor area per capita by decrease of family size, as mentioned before, were the main driving factor for urban expansion, and motorization also in local cities and towns.

Figure 6 shows the transition of Densely Inhabited District (DID) defined by each Population Census, showing the abovementioned phenomenon. While expansion of DID area were tremendous during 1960s and 1970s, and still continued in 1980s, the average population density of the area decreased consistently during 1960-1990.

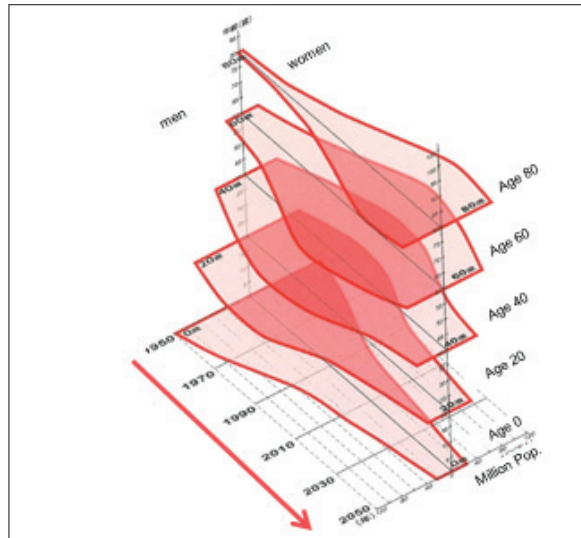
Secondly, the “demographic bonus” and the opposite “demographic onus” by the

Figure 6: Transition of Densely Inhabited District (DID)



source: Population Census

Figure 7: Demographic Bonus & Onus



source: Hidetoshi Ohno + Avant Associates(2008) "Shrinking Nippon" Kajima Publishing Co.

up growth tide of baby boomers generated different urban housing issues. Figure 7 shows population transition of segmented age group, during the transition of population pyramids from orthodox triangle to reverse triangle, as described before. When the so-called "dankai" generation, or the first baby-boomers, grew up to arrive at a certain age generation, the correspondent segmented housing market expanded, and when they further grew and left the generation, the market shrunk. These dramatic demographic movements generated several kinds of urban housing issues, such as construction of low level wooden rent housings, creation of hazardous

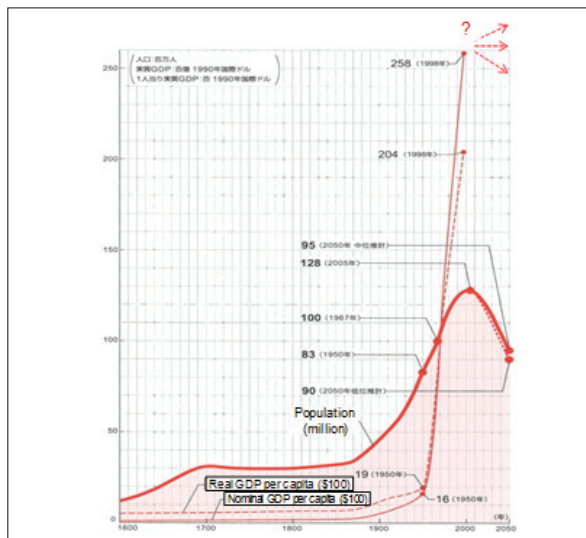
region against urban fire, development of suburban new towns, emergence of vacant housing problems, and etc.. Turning to future perspective, it is an important issue to know what housing and urban issue and policy the projected population decline and other demographic changes as described in the former clause will actually bring out in the future.

Figure 8: Population Decline and Aging Issue

I. Economic Issue	: Decline of working and spending population
II. Social Issue	: Sustainability of our social security system
III. Spatial Issue	: Sustainability of communities in small villages, suburban districts and condominium buildings

Figure 8 shows the 3 viewpoints of the issue of population decline and aging discussed in Japan. From the economic viewpoint, the issue is accepted as, decline of working and spending population, possibly relating to economic shrinkage (Figure 9). From social point of view, the issue is often discussed as matter of sustainability of national social security financing system, expecting more and more pension outgoes for elderly people and less and less income reserve from working generations.

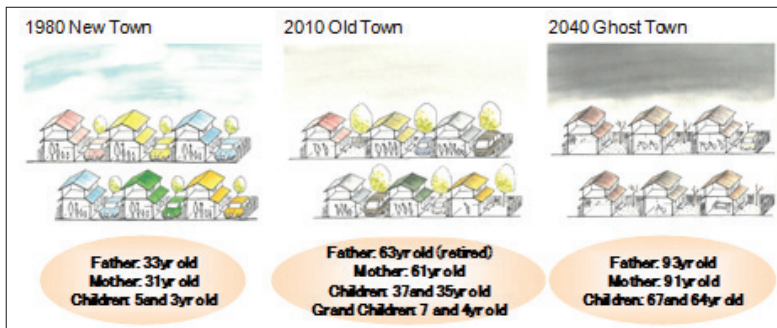
Figure 9: Transition of Population and GDP per Capita



source: Hidetoshi Ohno + Avant Associates(2008) "Shrinking Nippon" Kajima Publishing Co.

From spatial planning point of view, the issue is taken as sustainability of various communities; in small villages, suburban residential districts, condominium buildings, and etc.. As many of the developments during the rapid economic growth period intended to accommodate a mass of housing demand efficiently during short period time, the properties were owned, and flowability (selling and buying of the used estate) were low, many of these communities changed hand-in-hand with the progress or aging of the main household generation (Figure 10).

Figure 10: Transition of Suburb Communities

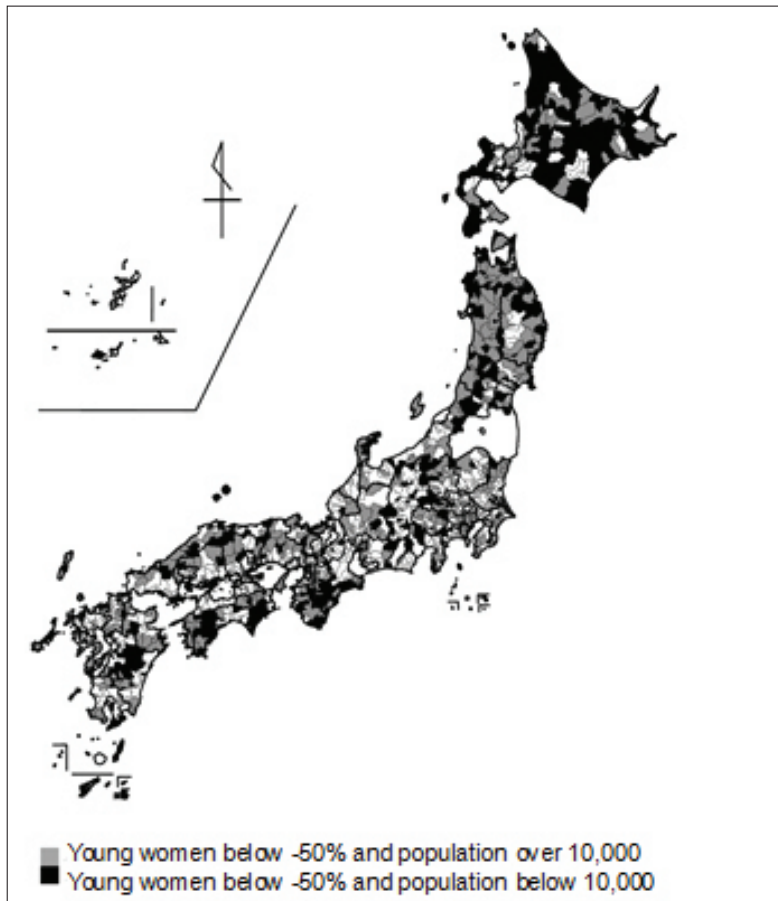


source: Atuchi Miura (2012) "Tokyo ha Kougai Kieteiku" Kobunsha Co.

Of course, the spatial issue itself is bringing out a lot of discussions throughout the nation. A recent topic is "Nippon Sousei Kaigi", a non-profit institute, trying to draw out our future. They focused on the future number of young women (20-39yrs) of municipalities as population reproduction potential and predicted the future population of municipalities in 2040, and projected the spread of non-resided areas, or unsustainable municipalities within both rural districts and metropolis (Figure 11). The black zone in the figure indicates the municipalities which will possibly "disappear" by 2040, because young women will be less than half of the present population, or below 10 thousand.

They insisted to make a common cognition of nation's serious depopulation situations, and to take prompt effectual policies based on long-term and comprehensive viewpoint. The first fundamental objective, they insisted, should be set as "satisfaction of public's 'desirable birthrate'", and thus all related policies should concentrate to

Figure 11: Population Projection by “Sosei Nippon”(2014)



source: www.policycouncil.jp/pdf/prop03/prop03_2_2.pdf

create social environment for young people to marry, bear and raise their children (besides coping with issues of increased aged generations).

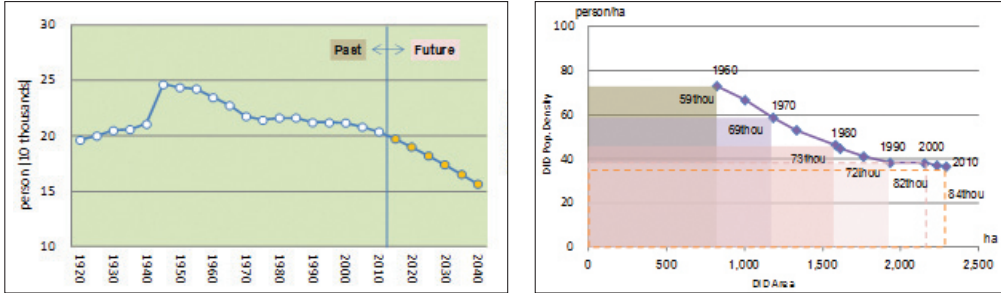
This future population projection together with the devastating term “disappearing municipalities” was talked about by many heads of municipalities or at local assemblies, of course, especially in such municipalities named as possibly disappearing.

1-3. Urban Expansion and Depopulation in Joetsu City

In this section, urban expansion and depopulation of Joetsu City, which is a local city located in the southwest of Niigata Prefecture and heavy snowfall area, is described as an example. The old city was approved in 1981 by an equal amalgamation of

former Takada city and former Naoetsu City when the City decided to build City Hall building in the middle of the 2 existent centers. Another amalgamation took place in 2005, with vicinal 13 municipalities (towns and villages).

Figure 12: Populatiom Transition in Joetsu City **Figure 13: DID Transition in Joetsu City**



The total population is 203,899 (by 2010 Population Census), and with slight exception from 1975 to 1985, the City’s population continues to decrease almost consistently after the WWII (Figure 12). By the forecast of National Institute of Population and Social Security Research, it is estimated to fall down to nearly 150 thousand by 2040. Population increases from 1980 to 2010 can only be seen in former Joetsu City area and adjacent former Kubiki Ward (former village), and population decrease in other 12 former towns and villages are sharp. By age divisions, over 65 years shares 26.3% of the total population, and especially in Oshima, Maki, and Yasuzuka Wards, the share rapidly grew, and recently reached over or nearly 40%. The population decrease is also remarkable, and the progress of further decrease is expected in these districts.

Densely inhabited district (DID) keeps expanding with the progress of infrastructure provision around Kasuga-yama where the City Hall locates (Figure 13, Figure 14). DID population density is consistently decreasing, and after 1985, fell below 40 people/ha. The city planning district, occupies 32.9% of the administrative area, and is composed of three city planning districts, among which only the Joetsu City Planning District contains the urbanization control area. The population density in the urbanization promotion area is low below 30 people/ha. As for FAR regulations, 500% is designated in the centers of Takada, Naoetsu, Kasuga-yama, and also around the Joetsu General Hospital, however, sufficiency rate is very low and they are misfit.

The Hokuriku Shinkansen (bullet train) station is under construction at the southern edge of the built up area and is planned to function in 2015.

There are little incentives working to intensify population and urban functions in the city core of Joetsu City, and the geography and the story behind urban formation does not easily admit it. Therefore, a strategy is needed to provide incentive to promote accumulation in the city core area together with control of accumulation in the suburbs. To go back planning history of Joetsu City, Figure 15 shows the “First J-Plan” of the City drawn up in 1996 targeting population of 300 thousand, by urban expansion between the “3 Cores” of Naoetsu, Kasuga-yama, Takada, to the east bank of Seki River, and around the new Shinkansen station.

Figure 14: Spread of DID in Joetsu City

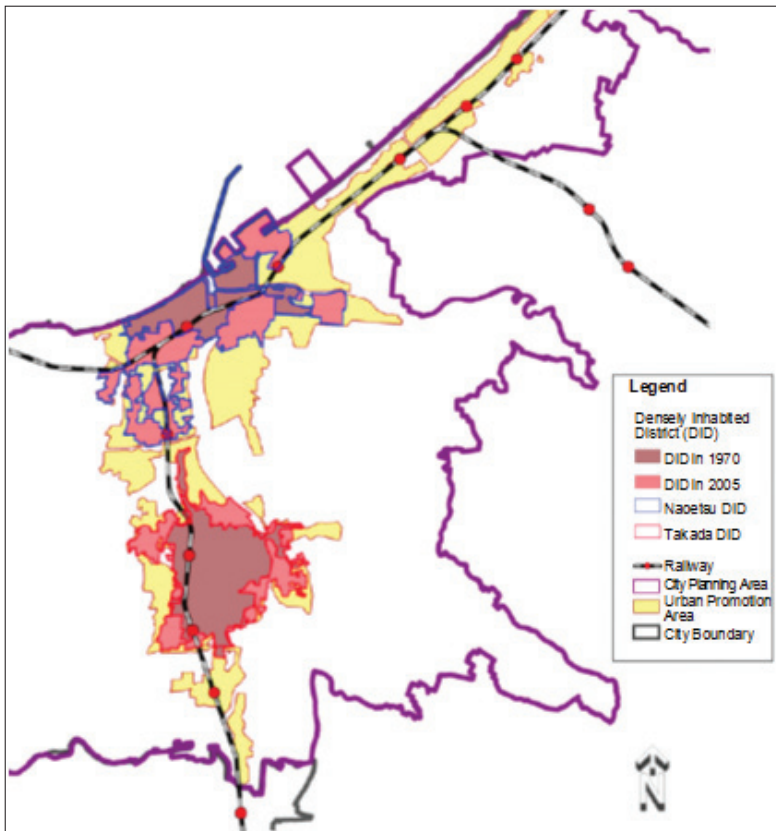


Figure 15: “First J-Plan” of Joetsu City in 1996 Targeting Population of 300thousand



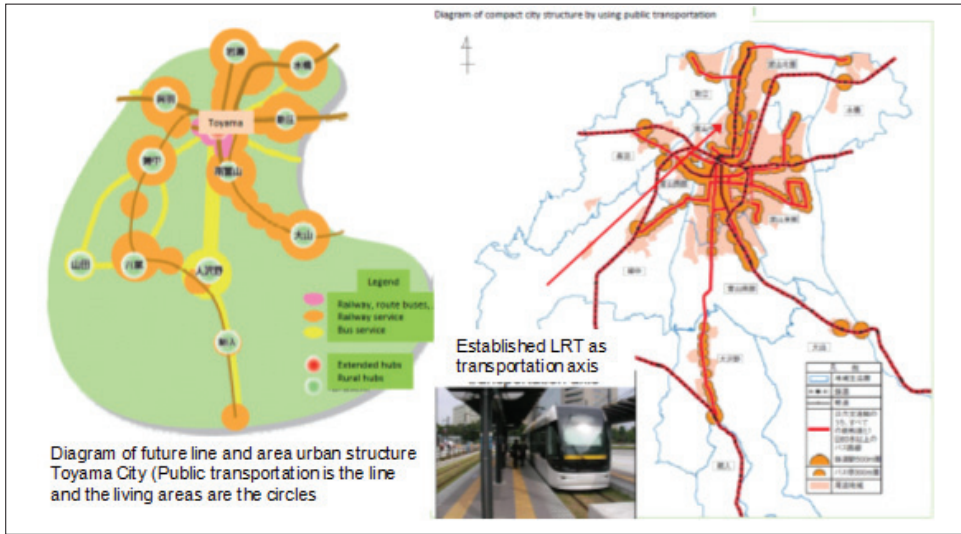
2. Spatial Policy in Depopulating Period

2-1. *The Review of Initiatives for Intensive Urban Structures*

It is recognized that to address the population decline, aging of society, and the necessity to streamline urban management costs, we should aim for a compact city with “intensive urban structure” in which a certain number of people live densely in an certain area where a good living environment and space for interaction are efficiently provided by concentrating the urban functions and public services they require. This report presents related trends.

The term “compact city” reminds us of initiatives taken by Aomori City and Toyama City, which were taken while the national and local governments were debating various issues in preparation for enacting new laws to invigorate city centers. The beneficial effects of encouraging compactness on the cost of maintaining public facilities and on the conservation of energy were advocated, and people’s focus was on concentrating urban functions in city centers and preventing additional expansion.

Figure 16: The Vision of Toyama Compact City



Toyama City created a compact city structure (lines and circles) centered around the transportation axis of railways, existing and new LRT as well as route bus lines and used housing subsidies to build housing near stations and stops of main bus routes (Figure 16).

Act on the Improvement and Vitalization in City Center, enacted in 1998, focused on concentrating urban functions in city centers, improving streets and parking facilities, and providing public transportation networks to city centers, to improve built environments together with the invigoration of commercial activities, while striving to minimize the contribution of the central government. However, city centers did not cease to decline as a result of unachieved designation of land use regulation and the continued competition to locate large stores in suburbs or on former factory land.

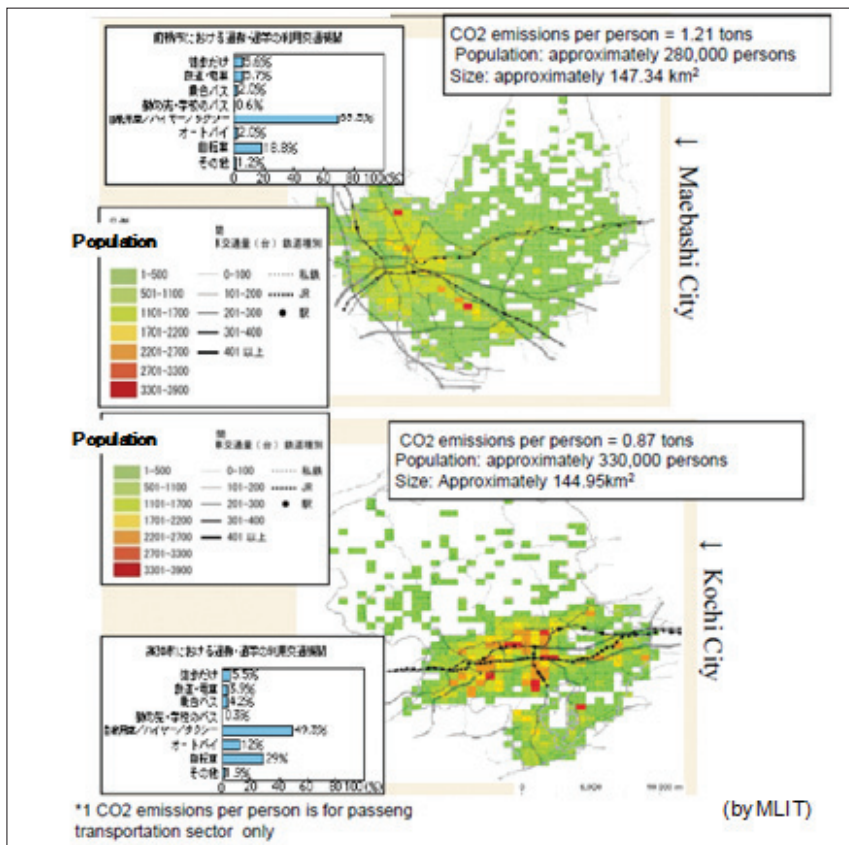
An advisory given in response to the question “How should urban planning be done in the new age?”, submitted in June 2005 by the Sectional Committee on Urban Planning and Historic Landscape of the Panel on Infrastructure Development, noted in its first report in February 2006 the need for “urban restructuring” to replace existing urban structures with concentrated urban structures, in which the locations of commercial, administrative, medical, cultural, and other functions which provide services over

wide areas are concentrated to ensure accessibility without reliance on automobiles, thus creating cities in which many people can enjoy convenient daily life. This resulted in the necessity for policies based on an awareness of urban shrinkage. The three revised acts on urban planning enacted in 2006 (Revised City Planning Law, Act on the Measures by Large-scale Retail Stores for Preservation of Living Environments, and Act on Vitalization in City Center) strengthen the involvement of the national government in approving plans made by local governments, setting and evaluating numerical targets, etc. and require measures to restrict the location of large-scale facilities which attract many customers, particularly in the suburbs of regional cities. Methods for land-use control in suburbs have increased, but the goals in this case were to help achieve goals established separately for city centers.

The Sectional Committee on Urban Planning and Historic Landscape continued studies in response to the question of 2005, and concluded its deliberations on February 2011, when it received progress reports from the Safe and Secure Urban Planning Subcommittee and City Planning Statutory System Subcommittee. The report from the City Planning Statutory System Subcommittee clearly states the basic guideline: “In place of past urban planning and related systems which focused on land and supply countermeasures, new systems will be repositioned to implement intensified city structures permitting sustainable urban life, sustainable urban activities, and sustainable environments.” In this basic guideline of the Ministry of Land, Infrastructure, Transport and Tourism (MLIT), announced in November 2012 to promote sustainable and vigorous national land and regional development, “regional intensification (proximity of medical, employment, and residential functions)” and “formulation of low-carbon and recyclable systems” are presented as directions for new policy development to create a sustainable society. Act on Promotion of Low-Carbon Cities, enacted on December 2012, conforms to such directions.

There is high correlation between compact cities and low carbon cities, as CO₂ emission is affected by the urban structures significantly. For example, Maebashi City and Kochi City, which both have the same size and population, though CO₂ emission per person in Maebashi City is 1.21 ton, CO₂ emission per person in Kochi City is only

Figure 17: Comparison of Maebashi City & Kochi City

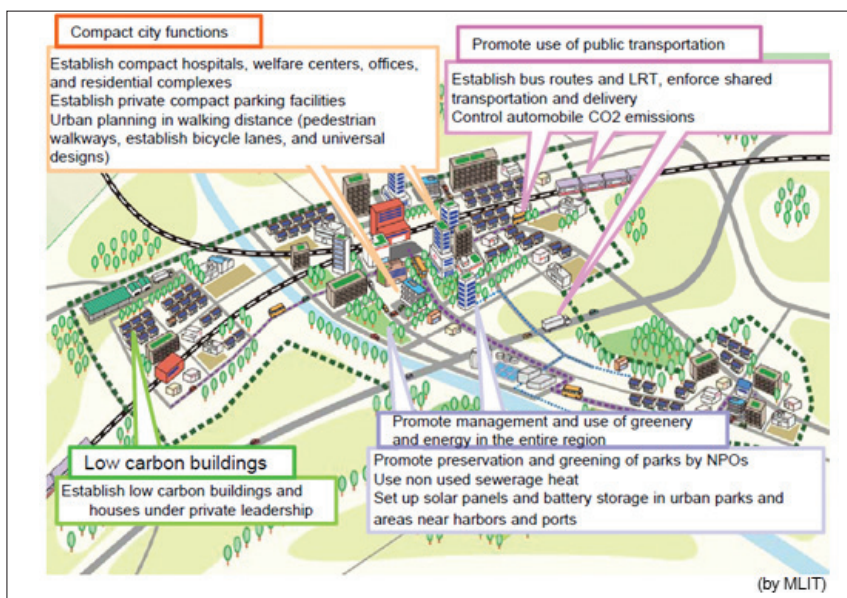


0.87ton (Figure 17). Therefore, Maebashi City has approximately 40% more annual CO₂ emissions per person in the passenger transportation sector as it is a low density city dependent in vehicle transportation. In addition, city areas with high population density tend to have lower CO₂ emissions per person.

Act on Promotion of Low-Carbon Cities, was enacted on December 2012, as the first step in bringing new perspectives, such as a way of the declining birthrate and eco-friendly living and livelihood of aging society, and to provide an environment where people and private businesses work together for the development of a compact city.

Under the act, local governments may designate Low-Carbon City Development Plan (Figure 18). The plan allows local governments to create ways to comprehensively promote countermeasures for a low-carbon city in the Urbanization Promotion Area.

Figure 18: Image of Carbon City Plans



Local governments may designate those items as follows in the Low Carbon City Development Plans.

- 1) *Planning areas*
- 2) *Planning goals*
- 3) *Requirements for achieving goals*
- 4) *Requirements for assessing achievement status*
- 5) *Planning period, etc.*

Local governments may certify Low-Carbon Building, in compliance with the pioneering requirements of a low-carbon city in the Urbanization Promotion Area. In order to be certified as a low carbon building, the building must take measures to contribute the low carbon city development in addition to the reduction of energy consumption to be more than 10% (energy saving standard ratio).

As incentive systems, reduction of income tax system for a certified low-carbon building and special bonus system to increase the total floor-area are prepared. Also, superior urban development project, applied to Low-Carbon city Development, can enjoy some types of measures for regulation relaxation and financial support

through subsidies.

Low Carbon City Plans are designated in 16 cities of the whole country on October 2014.

2-2.National Grand Design 2050

A new national long term vision, National Grand Design, was mapped out by Ministry of Land, Infrastructure, Transport and Tourism (MLIT), on July 2014. The National Grand Design shows the future vision, based on long term demographic forecast. MLIT plans to revise the statutory National Formation Plan (10 years plan), in accordance with this Grand Design.

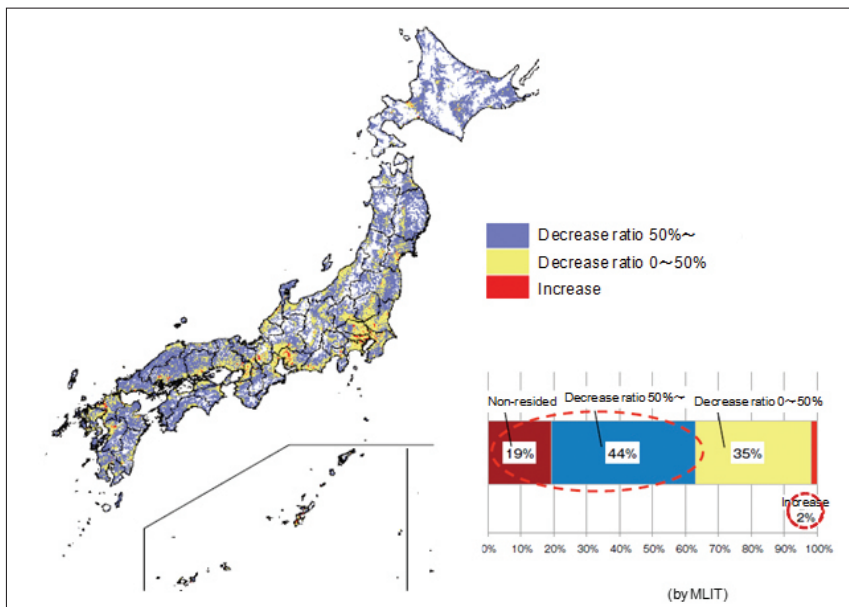
Outline of National Grand Design 2050 plots trends and subjects as follows;

- 1) Sudden population decline, come from declining birth rates
- 2) Aging of population reaching another dimension
- 3) Progress of globalization and serious competition among cities
- 4) Growing risk of mega disaster, aging infrastructures
- 5) Limitation of food, water, energy, global environmental issues
- 6) Renovation of technologies, such as ICT (information & communications technology)

Figure 19 shows population increase & decrease ratio from 2010 to 2050. MLIT investigated future population and the influence to land use, from the Population Census 1km mesh data of 2010. The figure shows that 19% of current resided area will be non-resided, and 44% of current resided area will lose more than 50% of the current population.

Our “Grand-design of National Land” declares to cope with such depopulation and aging issues mainly in 3 directions. Firstly, by substantive increase of production and consumption population by social participation of women and aged populations, who otherwise are blocked out from the labor market. Secondly, by maximum application of ICT technologies in geographically constrained areas. Lastly, by formation of

Figure 19: Population Increase & Decrease Ratio from 2010 to 2050



compact hubs and networks system, to provide urban dynamism, public and private services throughout the nation, and reduce their costs.

Of course, the weight and directions varies by such as the size and location of the city.

Figure 20: Population Increase & Decrease Ratio (2010-2050)

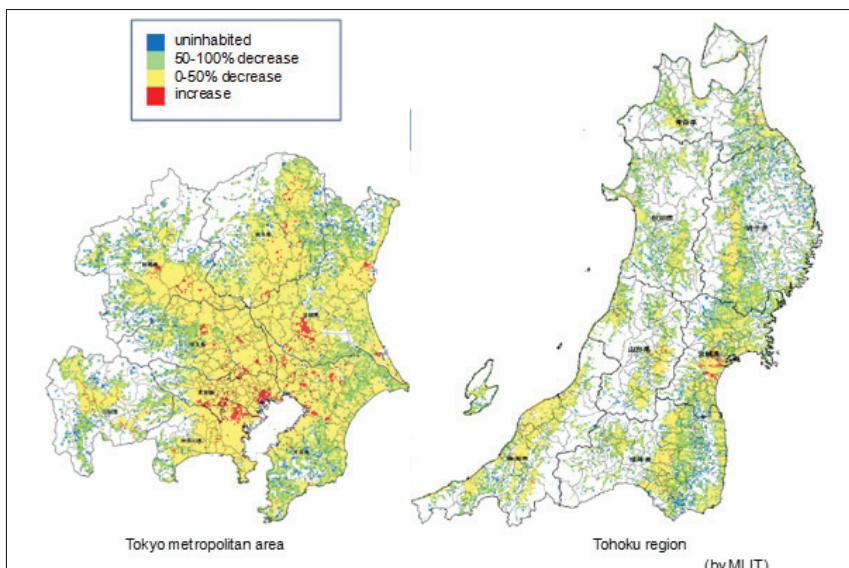


Figure 20 is the detailed situation of Kantou region, or Tokyo metropolitan area (left), and the detailed situation of Tohoku region (right), showing the contrast of the different depopulation and aging issues among regions. In case of Kantou region, there are still areas, especially in city center, expecting population increase, while most of the suburbs expect 0-50% decrease. However, rapid increase of aged people is comparatively more serious problem of the region. In Tohoku region, which is adjacent to the north border of Kantou region, only surrounding areas of Sendai-city expect population increase. Northern part of Tohoku region, is expected suffer from spread of non-resided areas widely among mountainous areas.

Figure 21: National Land and Reginal Development by the Reinforcement of Diversity and Connectivity

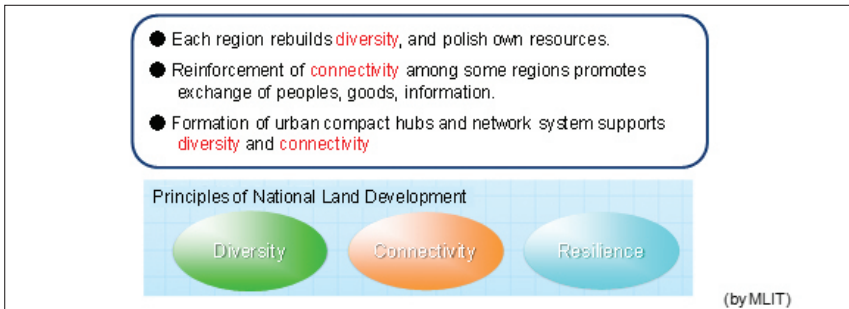


Figure 21 shows the principles of the National Grand Design 2050. To develop and sustained communities and regions, including rural area under such situations, reinforcement of diversity and connectivity are required; first, by looking for unique resources for local development in each region, polishing them and rebuilding diversity, secondly, by reinforcement of connectivity among regions promoting exchange of peoples, goods, and information, and finally, by formation of urban compact hubs and network system supporting diversity and connectivity. Resilience for disaster prevention should also be required.

Basic strategies are shown in Figure 22 and upper two items are the important issues; construction of small core, especially in rural areas, and high level combined urban area, as the cell of the national land are required, and formation of super mega region by new traffic linkage is also required in 3 major metropolitan areas (Tokyo,

Nagoya and Osaka).

Figure 22: Basic Strategies of National Grand Design 2050

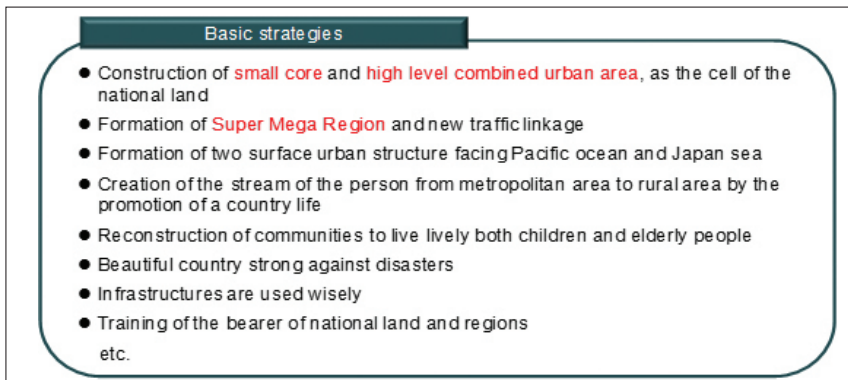


Figure 23: “Small Core” Concept in Rural Areas

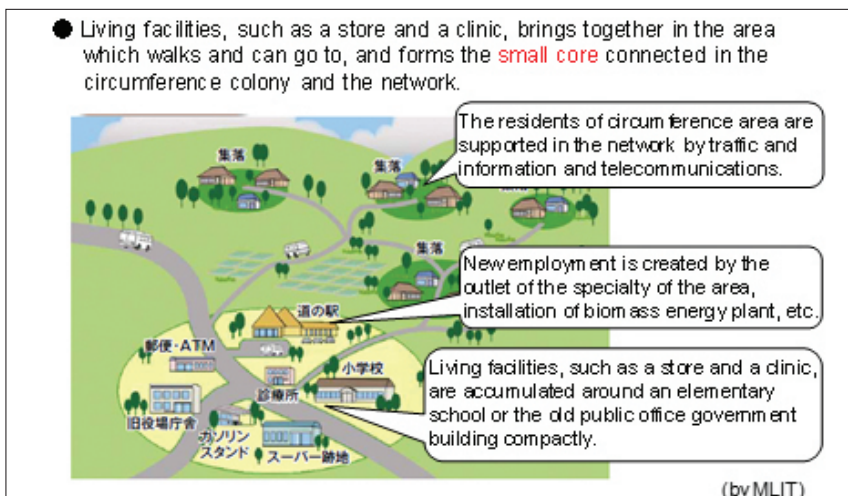


Fig 23 explains the concept of “small cores” in rural areas. As in rural areas, depopulation and aging are already progressed; non-resided area will be 19% of current residence area in 2050. In order to maintain the communities, scarce living facilities, such as stores and clinics, are accumulated together in the limited small core area compactly. It will be convenient for aged people get there, and emergency correspondence will also be easy.

In regional level, new concept of “high-level combined urban area” is proposed, in

order to maintain considerable population in the region, by formation of net work among several cities (Figure 24). In case of Matsue and Yonago urban area, in two adjacent prefectures, they are proposed to be connected by a highway, enabling to maintain population of 300 in the combined urban area which otherwise will be impossible. By such ways, several local cities share the high level urban functions mutually, for instance, emergency medical center, university, and department store and etc., by utilizing network and strengthening connectivity

Formation of nation-wide “super mega region” is another new concept in regional level (Figure 25). Construction of new linear Chuo-shinkansen (bullet train), starting this year and intended to be completed in 2027, will link Tokyo, Nagoya and Osaka within only an hour’s trip. By the Linear Chuo-shinkansen, 3 metropolises will be unified and form super mega region which comply total population of 64 million. The scale is so large and has no precedent in Japan and rarely in other parts of the world, and making the most use of their resources is highlighted.

Figure 24: Formation of “hogh-level Combined Urbam Area

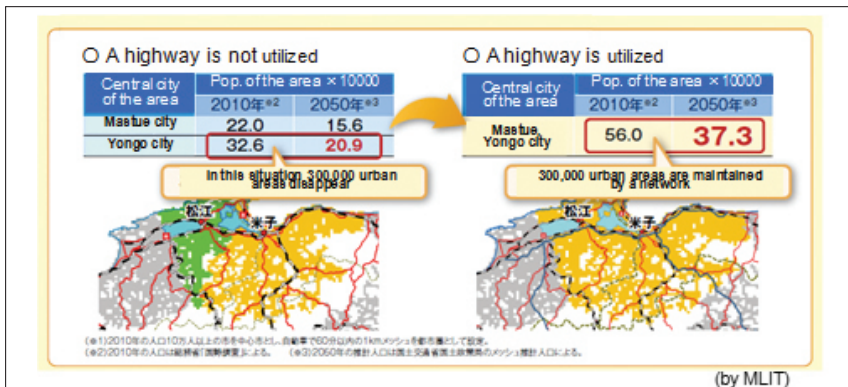
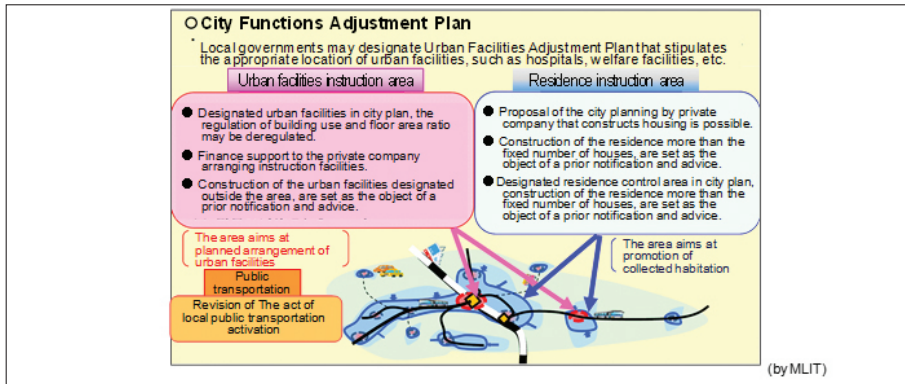


Figure 26 shows the underlying keyword of “urban compact hubs and network” systems. To maintain high level urban functions such as emergency and critical care center, university and department store, considerable population is required even under the depopulating situation. Therefore, it is required to accumulate urban facilities and population compactly and also to form network for securing servicing area population.

Figure 27: City Functions Adjustment Plan under the Revised Act on Special Measures Concerning Urban Renaissance



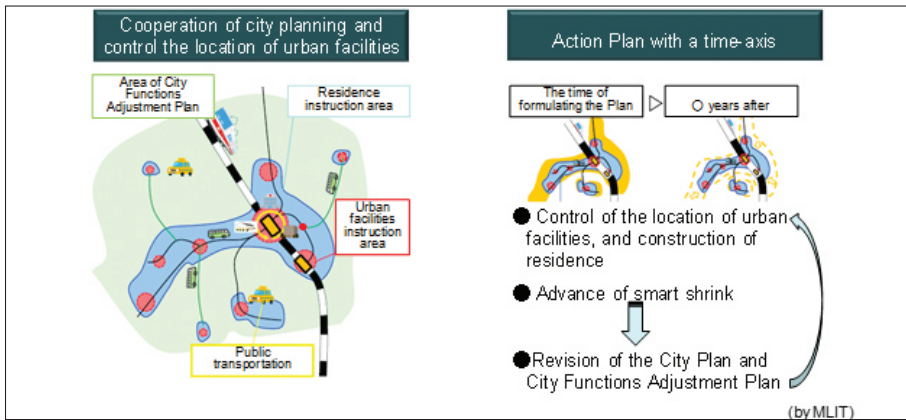
Urban facilities instruction area may be designated, in the plan, mainly in central area of the city, considering the arrangement of necessary urban facilities. In this area, local government may designate necessary urban facilities in each zone, and the regulation of building use and floor area ratio may be deregulated. Also, finance and taxation support will be provided to the private sector arranging instruction facilities in accordance with the plan. On the contrary, the constructions of urban facilities are controlled outside this area, by obligation to prior report and may receive advice to/from local government.

Residence instruction area may also be designated, mainly in surrounding area of the urban facilities instruction area, considering promotion of collected habitation. In this area, proposal of the city planning by private sector is possible. On the contrary, outside of this area, the constructions of residences with more than a certain number of houses are controlled. Simultaneously, The Act Concerning Activation of Regional Traffic was revised, and come to be able to make traffic plan to contribute to form a compact city.

2 remarks can be pointed out of this new control system (Figure 28). First, it is not a system with the compelling force, such as previously described Area Division System and Development Permission System by the City Planning Law. However, it is a system based on cooperation of city planning and gentle control, consist of report

and advice. Secondly, it can be said that this system is workable as a action plan with a time-axis. First of all, based on the Plan, the location of necessary urban facilities and construction of residence are controlled in designated areas. Local governments may revise the City Plan depending on the advance of smart shrink of the urban area. In the next stage, local government may designate new city functions adjustment plan for the future. So, it looks like PDCA (Plan-Do-Check-Action) cycle corresponding to the future forecast and actual changes of population and the land use.

Figure 28: 2 Aspects under the Revised Act on Special Measures Concerning Urban Renaissance



3. Draft Scenario for Systematic Urban Shrinkage of in Depopulating Cities

3-1. Shrinking of Urban Areas and Relocation of Residents

With the ongoing depopulation and tough financial affairs/environment restrictions, one of the recent challenges in the urban policy as described is to realize a “consolidated urban structure”, compact city, as a form of “sustainable city” in provincial regions. Many cities have recently been implementing such measures as; revitalization of central commercial areas, the consolidation of city functions into a specific zone in the areas designated for urbanization, the promotion of the use of public transportation and its network maintenance, the control of large-scale

customer-attracting facility locations, and the prevention of the expansion of urban areas.

However, with the exceptions of including measures to prevent the expansion of the urban areas in suburbs, they focus on accepting the migration and the city functions to consolidated areas, and does not include any measures to proactively shrink the urban areas by relocating the population and the city functions from non-consolidated areas. Logically thinking, concentration of urban population to consolidated areas under the depopulating circumstances would mean population decline in sprawled suburbs. Hereinafter in this chapter, an attempt by National Institute for Land and Infrastructure Management (NILIM) to map out the measures to proactively promote the “systematic shrinking of urban areas”, which might be necessary as an option when restructuring the urban areas that are experiencing the depopulation.

The followings could be assumed as cases that require some measures to shrink urban areas.

- (1) Along with the depopulation, the demands in the urban land use have decreased and vacant lands and houses have increased spontaneously.
- (2) In the period when the situation above is left as it is and until the urban land use disappears, QOL (the quality of life), of residents has dropped and the management cost of administrative service has increased.
- (3) The emigration of residents is intended as a policy in the stages from (1) to (2) in order to control the disadvantages in the stage (2).

From this point of view, it is clear that a key point is how to proceed the relocation of residents followed by the depopulation in the area, though there are not so many cases that can be referred to in Japan.

When it comes to agricultural villages, there are 47 track records on the depopulating-village relocation project that intends to move from inconvenient-to-live marginal villages in mountains into the foot of them. Former Sabukawa settlement of Saito

Figure 29: Former Sabukawa Settlement of Satio City (left) and Inhabitants' Relocation House (right)



Figure 30: Village Restructuring of Oguni Town. A Farm House Which is not Used in Winter (left) and Inhabitants' Relocation House in the Village Center (right)



City in Miyazaki Prefecture is one of these settlements which decided to relocate from mountainous area down to plain fields (Figure 29). Oguni Town in Yamagata Prefecture has succeeded to systematically promote the village restructuring as a municipality, through core-village preparation, village relocation, and method of living in mountain in summer and at the foot in winter (Figure 30). Yet, since the social circumstances have been changed as the road development and maintenance level has improved, as in the pavement and the snow clearance, we haven't heard of any cases that have been worked on newly in recent years.

In urban areas, the collective relocation for disaster prevention is in progress in such areas affected by tsunami disaster by the Great East Japan Earthquake (in March 2011). When safety against natural disaster is concerned, it is relatively easy to obtain consent among the resident about the relocation and the public to cover for the costs.

Figure 31: Urban Shrinkage of Yubari City. Vacant Lots by Unplanned Withdrawal of the Past (left). City Master Plan (center). Public Housing Accepting Movers from Shranked Housings (right)

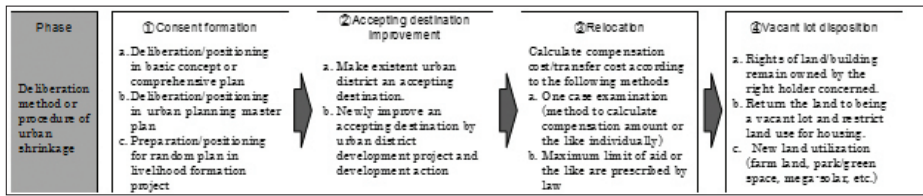


Otherwise, Yubari City in Hokkaido is one of the rare examples of relocation in recent years (Figure 31). It is developed around coal mines and had the population of 120,000 in its primetime, but now its population dropped to over 12,000 along with the closure of the mines. Its growth strategy with the tourism promotion etc. hit a setback and it is now facing a financial predicament, and the City is designated as an organization for fiscal reconstruction in 2010. A master plan of urban planning of March 2012 is the almost only case in Japan that specifies urban shrinkage, basically targeting the “compact town development that reduces the urban management costs”. It is intended to restructure and consolidate the municipal dwelling houses, old houses for coal miners, in each area at the moment and heads for restructuring through a gradual construction of sustainable regional communities by consolidating urban areas in north to south in a long run.

3-2. Implementing Process and Elements of Systematic Urban Shrinkage of Urban Areas

Through investigation so far made us realize that the improvement of QOL of residents is a major factor. Currently, we have worked out some draft scenarios for systematic shrinking intending to build a method based on them to indicate the advantages and disadvantages in quantity in the future (Figure 32).

Figure 32: Implementing Process for Urban Shrinkage



First of all, by reference to the process of relocation of depopulated settlements and implementation of urban planning projects, we compiled practical procedures of systematic shrinkage centering on the relocation of residents and arranged them in the following four phases.

- (1) Consensus formation: Discriminate the urban area into consolidated and shrinking zones in upper level planning process etc. and obtain an agreement in the latter.
- (2) Preparation of relocation base: While the preparation of relocation to accept residents is carried out in the consolidated zone, new public investment is cancelled in shrinking zones.
- (3) Relocation: After the completion of the relocation base, relocation of residents from the shrinking zone progresses, and in parallel, maintenance management of infrastructure in the degenerating zone is cancelled serially.
- (4) Disposition of vacant lots: Along with finishing relocation from the shrinking zone, initiate improvement as a vacant lot and utilization of the site.

Furthermore, on the premise of the above process, we have arranged composition elements necessary for the formation of the scenario's draft in the following four items.

- a) Residents' relocation method and their destinations: The two cases of relocation accompanied by coercive force and voluntary relocation incentives by inhabitants and provision of housing to be an accepting destination by government and securement of destinations by their own exertions are considered. It can be presumed that initially inducing voluntary relocation, and subsequently, transfer to a method to be accompanied by coercive force or the

like to a phased combination.

- b) Program for phased abolition of facilities and so on: Based on the concept of strategic infrastructure improvement and management, on the premise of differentiation and concentration for service levels on a zone-by-zone basis, from the dual viewpoints of renewal/reduction and repletion/maintenance/abolition, consideration can be carried out on four types: renewal/repletion, renewal/maintenance, reduction/maintenance and reduction/abolition.
- c) Program for phased abolition or the like of administrative services: In the process of degeneration, it is difficult to abolish administrative services for elderly people with low incomes, so a decrease in provision levels and substitution of services with more inexpensive costs becomes the premise. In addition, livelihood assistance services for the elderly in the consolidated zone can be presumed.
- d) Content of improvement for transferred vacant lots: Other than the utilization morphology of an open space utilization type, a case to make it a green space also is presumed unless it can be positively utilized.

The specification of abovementioned processes and the composition elements had been considered in the case study districts and we have established draft scenarios. Based on this draft scenario, we have also calculated and arranged the effects of systematic shrinkage of urban areas, from both aspects of quantitative and qualitative analyses.

4. Conclusion

To conclude, Figure 33 is the ideal image of the compact city and integrated urban structure by MLIT.

Within the Urbanization Promotion Area, Local government designates Urban Facilities Instruction Area, in red lines. Residence Instruction Area also designated, in a blue lines. Some difficulties, facing local governments during the consideration of City Functions Adjustment Plan, we hear, are,

Figure 33: Ideal Image of the Integration of Urban Structure



- 1) difficulties for residents to understand the change of future area, and living condition changes predicted under the population decline
- 2) difficulties to evaluate the long-term physical, social and economic effect under the population decline
- 3) difficulties to make a fair evaluation and comparison among several possible plan alternatives
- 4) difficulties for the local governments to reach to agreements with residents to a plan

So, our research institute is trying to start a new research & development project, “Research on the way of well-planned closing or restructuring of suburban built-up areas” (study duration is three years), to predict the future urban area practically, to evaluate several zones to make smart-shrink or reorganize urban area, and to develop appropriate management guidelines of the infrastructures for the reduction of maintenance cost, and of course, maximization of citizen’s quality of life (QOL).

In this research project, first, we are planning to develop the method to assess the current and future conditions of suburban housing areas, for example, local

population structure, administrative costs (maintenance costs of infrastructure, service costs, etc.) and benefits (quality of life of residents, reduction of CO₂, etc.), and to determine objectively if a specific suburban housing area should be closed by removing the residents, or should be sustained by restructuring. Secondly, we are planning to develop the method to promote the closing or restructuring projects concretely, considering residents' intention and administrative costs. We should also study how to promote the gradual and efficient restructuring or closing projects considering the residents' life, not by removing them, but by downgrading the level of infrastructure and service there or providing alternative services to residents. Thirdly, we are planning to develop the scheme to promote the restructuring project with income by utilizing empty houses and lots. We are thinking the possible business is, for example, running solar power generation at empty lots or vegetable plant in empty house.

We hope that our research & development overall, will bring good results and contribute to solve the difficulties.