

New Concept on a System of Regions and the National Land Structure

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Summary: Our country has already entered an aged society from an aging society. Even though this situation advances more, it will be impossible to return to the past young society in the near future. Senior citizen's ratio will exceed 30% of the total population in 2035, which will be right a super-aged society. In the circumstances, all of the local regions are suffering with the expansion of disparities by the drop of birthrate and the increase of elderly people, not only between Tokyo but also among communities of rural areas. Because of the expansion of communities which are occupied by many aged inhabitants, it will be difficult to sustain the region, and it is the upmost matter how to resolve this issue now.

In this study, we discussed the crucial method for the establishment of regional system. Firstly, imbalanced differences in population among urban areas and rural areas were studied. And some regional problems were made clear as a result. Secondly, in order to address these regional issues, a region was proposed as the cooperation system of a central city and the surrounding districts. Based on our proposed system, regional policies were outlined. Besides, it was stressed that the inverted pyramid-shape of a wide regional block and the national structure with the low hierarchy was preferable for the national land structure.

Keywords: regional structure, national land structure, national planning, regional planning.

1. Introduction

The population of Japan was transformed into the decreasing process from the increasing one after amounted to the peak of 128 million people in 2005. Under such conditions, our country rushed at a super-aged society in which the senior citizen ratio exceeded 20 percent by the drop of birthrate and the advance of aging, from the aged society up to those years. And, the distortion of social structure in our country has become severer.

According to the Research Institute of Social Security and Population Problem, the senior citizen ratio will amount to 33.7% in 2035. As for the population, 17 million people will disappear from the one in 2005. This population is equivalent to people of Kyushu and Shikoku. It is also pointed out that the population corresponding to people of Tohoku and Hokkaido will disappear from Japan after a quarter of a century from now. One out of 3 people will be a senior citizen of more than 65 years old.

The innovation and rationalization on the social system will advance still more in the future, and local activities on society or economy might be lower. The population of our country will over-concentrates to the metropolitan area, if the construction of the social infrastructure institutions will be pushed forward as it is. Disparities in urban activities between local areas and capitals will also enlarge more and more. Therefore, problems on how to overcome the ultra-aged society and how to prevent the expansion of disparities between areas should be urgently handled in the national development plan and local policies.

If such policies for our national land are not performed and effective results are not obtained, the country,

especially the regions might not exist at the normal state on their future. In such meaning, the overcoming of the serious conditions of the regions must be the basic concept of national development plan. Besides, it is required irresistibly that an area and a district are revised and made sustainable effectively.

The conventional national land development plans have been settled and revised repeatedly, since the first plan in 1962. If reviewing all of plans, they aimed consistently to dissolve the differences among regions and to promote the balanced development of the national land. It might be said that our country has been somewhat rebuilt at viewpoints of regions.

Considering the background of the times, the developments of stronghold districts, which were far away from the capital, were promoted at the first national land development plan. In the secondary development plan, main issues were to progress the big development projects and the high-speed transportation facilities. The formation of the multi-polarization's country and decentralization's one in which many residential districts were settled was the aim in the 3rd plan. Furthermore, the construction of the multi-axes country was promoted by the exchanging network society of the 4th plan, and by the participation and cooperation of various organizations in the 5th plan.

If linking together these 5 plans which have been promoted for a quarter of a century, the concept of national land structure will become clear. In the program of national land development, stronghold projects for development and settled areas for residences were tackled. Then, the ideas of the multi-polarization of national land and the networks of transportation and communication were proposed and performed. Besides, the balanced development of the national land was expected by the ripple effect of multi-axes.

Certainly, the economy has been grown up with these efforts. Compared with the case without their plans, the imbalanced disparities among regions might be improved somewhat toward good conditions.

The reality is hard, however. The concentration of population to cities has resulted into the drastic decrease of young generation and the big increase of aged persons in regions. In the process of such change of population, we could find no evidence that removed the imbalanced differences in the various fields of urban activities and living conditions of regions. On the contrary, the disparities among regions and cities have enlarged greatly in late years. If everything in the differences advances as it is, our country may tumble down in social activities and economic growth at the end.

Under such uneasiness, the latest plan³⁾ to form our national land was decided in the cabinet meeting in July, 2008, which replaced the conventional 5th plan. In accordance with the plan, our country may be rebuilt under a set of the wide local block areas, which are developed individually, and the effective use of national land might achieve the peaceful and safe life. In each wide regional block, the characteristic strategies will be planned. Revising the past national developing plans, the country plan will be drastically readjusted and revised. If saying at the standpoint of the regions driven into a corner, it is wished that the aims in this plan will be achieved without fail.

As viewing the disclosed new plan, however, the basic concept seems to be on the track of past plans. On the basis of development projects and the districts settled with residence of the 3rd national development plan, it might be seen that the formation of the country is revised by the interchanging network of the 4th plan and is promoted by the participation/linkage of the 5th plan. Although some new ideas in the plan are found, it cannot understand how the results of the plan meet with our expectations in a region.

In another viewpoint, the national land in the new plan is divided by blocks crossing the country, while our country in the 4th plan was framed by the lengthwise axes. The aim of new plan is to make policies for the rebuilding of each regional block. If so, considering greatly the different features of the region, the block plan must be proposed ahead. Then, the plan for the formation of the national land should follow. If the frame in the country precedes and the regional block plan follows, there is a matter as for a regional plan.

When the national plan is preceded, it should be proposed how to frame the basic and reliable skeleton of the country, in which the regions should be sustainable. Although we interest in the structural design of the region under the tight skeleton of the country, we cannot find the satisfactory regional policies yet. The vitality of capitals with a large quantity of energy and the concentrated population will grow up more and more, if the country structure for

competitive activities among regions is formed taking its own course.

Of course, the target of the formation plan of the country will be the future after 10 years. Therefore, the plan cannot ignore the past step-by-step plans at all. To fill the satisfaction of people, requests and issues of various regions and fields must be also considered in the new plan. Requests are dispersed variously, however, and the aim of regions will be ambiguous.

For all that, we cannot accept the disclosed official plan in the serious region where the abolition of village will be worry. At the villages being inhabited by many ultra-aged people, 87% of aged persons hope to live in their villages, permanently¹⁾. So, the uppermost issue of the country plan is how to rebuild effectively and timely the sustainable region. To return the land to the natural conditions may be a main issue in some areas, though it is very difficult.

The development plan of the country was proposed certainly. However, the detailed plan of the region will be revised and the strategic projects will be carried out from now. At such chance, studying the concept of national development plan, it is significant to image the elementary structure of the country and the region.

2. Serious disparities of population in the region

2.1 Expanding of the difference of population among 47 prefectures

Fig. 1 shows the curves of time series data of ratios to 1985 on population, young population and aged population. The changes for past 20 years by data and for future 20 years by prediction are shown on the graph²⁾.

The ratio to 1985 on the population is 0.914 in 2035, while 1.060 in 2005. And, as shown in the previous chapter, the ratio in 2035 is decreased 13% than the one in 2005. The drop of the ratio of young population is more serious. The ratio in 2005 is 0.676, and in 2035 is 0.404. Furthermore, the population of young generation in 2035 will decrease to 60%.

In the meantime, the aged population increases drastically as in the Figure. The ratio in 2005 is 2.07 and the one in 2035 is 2.99. In particular, ratios in recent years are abruptly enlarging, because people of the baby-boomer are aging.

In brief, the aged generation is increasing steadily over all of the country, while the young generation is decreasing radically. The important problem in the region is not only such one, however. It is significant that the disparity in the drop of population in the region is expanding drastically.

The cumulative distributions of the rates of population and land area in each prefecture are shown in Fig. 2. Data are lined up according to the scale of population density, and their cumulative numerical values are dotted⁴⁾.

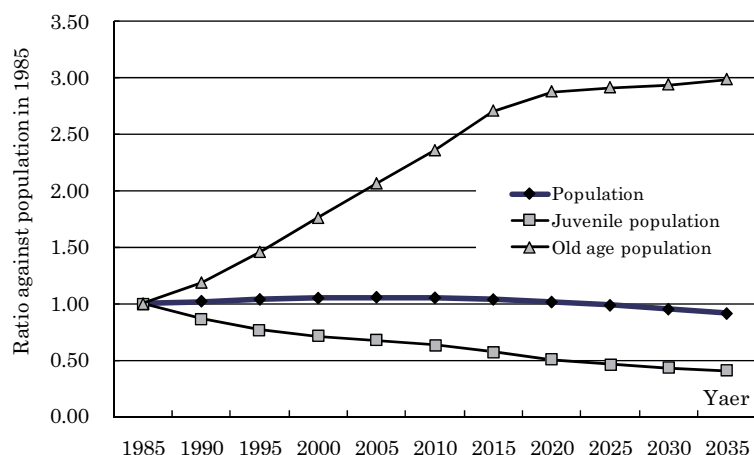


Fig. 1 Time series data of the population, young population, and aged population, and their predictions

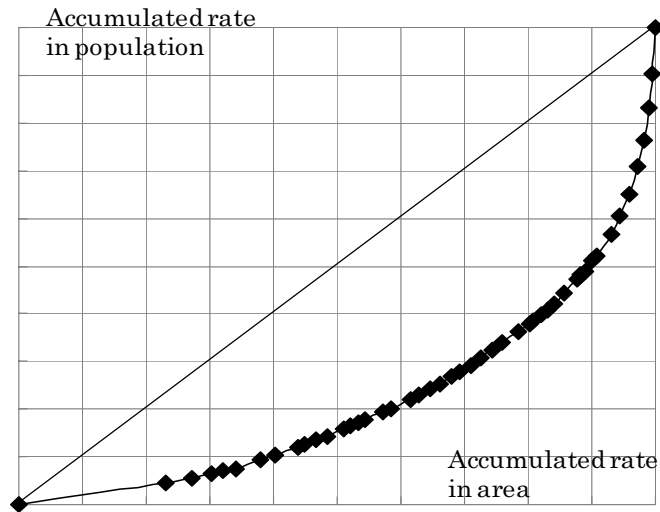


Fig. 2 Lorenz curve on the populations of prefectures (2005).

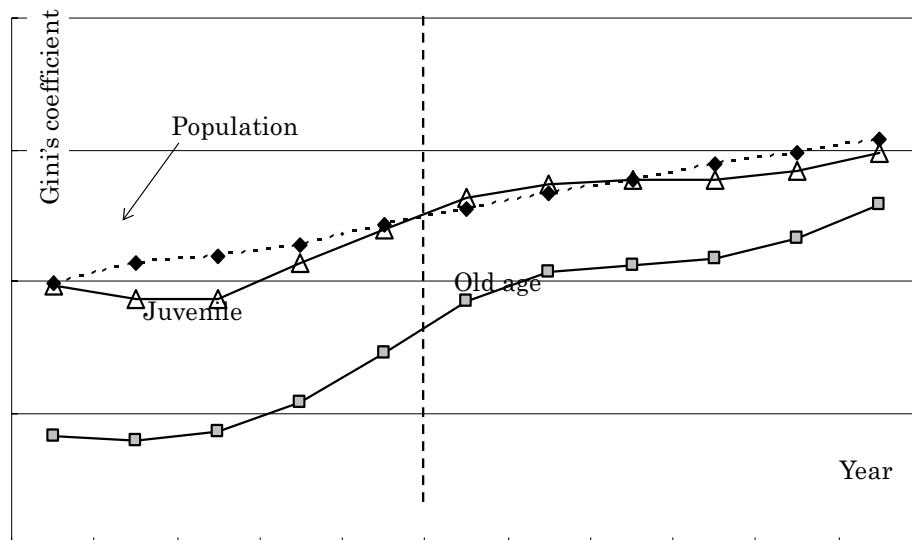


Fig. 3 Gini-coefficients on the populations of prefectures

In the graph, the diagonal line of 45° is obtained when the distribution of population is perfectly uniform all over the country. Reversed L with the horizontal axis and the vertical line at the right side is the case of perfect population concentration under the pole of Tokyo. As in Fig. 2, the actual distributions of population are presented as the curve among these two types of extreme situations, which hang down from the diagonal line.

It is significant to know how large the slack of curve is. If the slack is little and the curve is closer to the diagonal line, small disparities among prefectures can be found. On the other hand, there exist big differences among prefectures in the case of large slack. Therefore, the area surrounded by the diagonal line and the curve means the degree of imbalance of population among prefectures, which is named Gini-coefficient. The Gini-coefficient is within from 0 to 0.5.

Dotted line in Fig. 3 shows the year-by-year data of Gini-coefficients on the population distributions among prefectures. While it was 0.274 in 1985, the Gini-coefficient in 2005 increased to 0.286, and it will reach 0.302 in 2035. Prefectures of which population will be increasing toward 2035 are only Tokyo and Okinawa. In particular,

Table 1 Populations, population's densities and areas of prefectures

		2035 Population				2035 Jevvenile population				2035 Old age population				
Order by population density		Rate of area	Prefecture, etc.	Population density	Cumulated rate in area	Cumulated rate in population	Prefecture, etc.	Density in Juvenile	Cumulated rate in area	Cumulated rate in population	Prefecture, etc.	Density in Old age	Cumulated rate in area	Cumulated rate in population
				*1000per./km2				*1000per./km2				*1000per./km2		
lower rank	47	0.2297	Hokkaidou	0.053	0.230	0.040	Hokkaidou	0.004	0.230	0.035	Hokkaidou	0.020	0.230	0.044
	46	0.0420	Iwate	0.068	0.272	0.049	Akita	0.006	0.261	0.041	Iwate	0.026	0.272	0.055
	45	0.0315	Akita	0.068	0.303	0.056	Iwate	0.007	0.303	0.051	Akita	0.028	0.303	0.063
	44	0.0185	Shimane	0.083	0.322	0.061	Kouti	0.008	0.323	0.056	Shimane	0.031	0.322	0.069
	43	0.0196	Kouti	0.084	0.341	0.067	Shimane	0.008	0.341	0.061	Kouti	0.031	0.341	0.075
	42	0.0245	Aomori	0.118	0.366	0.076	Aomori	0.011	0.366	0.070	Fukushima	0.042	0.379	0.091
	41	0.0379	Fukushima	0.120	0.404	0.091	Fukushima	0.012	0.404	0.087	Aomori	0.045	0.404	0.101
	40	0.0361	Nagano	0.135	0.440	0.107	Tokushima	0.014	0.415	0.092	Ngano	0.048	0.440	0.118
	39	0.0183	Yamagata	0.139	0.458	0.115	Nagano	0.014	0.451	0.110	Tottori	0.049	0.449	0.123
	38	0.0097	Tottori	0.141	0.468	0.120	Yamagata	0.014	0.469	0.119	Yamagata	0.051	0.468	0.132
	37	0.0175	Miyazaki	0.144	0.485	0.128	Tottori	0.015	0.479	0.124	Miyazaki	0.053	0.485	0.141

higher rank	10	0.0127	Kyouto	0.493	0.901	0.476	Kyoto	0.047	0.901	0.490	Kyoto	0.159	0.901	0.500
	9	0.0231	Hyogo	0.572	0.924	0.519	Hyogo	0.056	0.924	0.535	Okinawa	0.174	0.907	0.511
	8	0.0063	Okinawa	0.625	0.931	0.532	Okinawa	0.083	0.931	0.553	Hyougo	0.196	0.931	0.555
	7	0.0133	Fukuoka	0.917	0.944	0.572	Fukuoka	0.090	0.944	0.594	Fukuoka	0.299	0.944	0.594
	6	0.0140	Tiba	1.082	0.958	0.622	Tiba	0.098	0.958	0.641	Tiba	0.370	0.958	0.644
	5	0.0141	Aiti	1.367	0.972	0.685	Aich	0.142	0.972	0.710	Aiti	0.406	0.972	0.700
	4	0.0104	Saitama	1.661	0.982	0.742	Saitama	0.150	0.982	0.764	Saitama	0.561	0.982	0.757
	3	0.0066	Kanagawa	3.529	0.989	0.819	Kanagawa	0.319	0.989	0.837	Kanagawa	1.125	0.989	0.830
	2	0.0052	Osaka	3.890	0.994	0.885	Osaka	0.370	0.994	0.904	Osaka	1.295	0.994	0.896
	1	0.0058	Tokyou	6.038	1.000	1.000	Tokyo	0.481	1.000	1.000	Kyoto	1.852	1.000	1.000
			Japan	0.305	0.352		Japan	0.029	(0.048)		Japan	0.103	(0.071)	

Note 1) Netted Blocks are Prefectures which have changed their ranks against 2005.

Note 3) Boldfaced numerical values are those that have become large against 2005.

Note 2) Boldfaced prefecture are located in metropolitan area.

Note 4) Numerical value in the bracket of Japan is the population density in 2005

the population's rate in Tokyo will enlarge from 9.8% to 11.5% as shown in Table 1. Besides, the population in our country will concentrate into the metropolitan area organized by Tokyo, Kanagawa, Saitama and Chiba. The rate of population in the capitals will increase from 27% in 2005 to 30% in 2035.

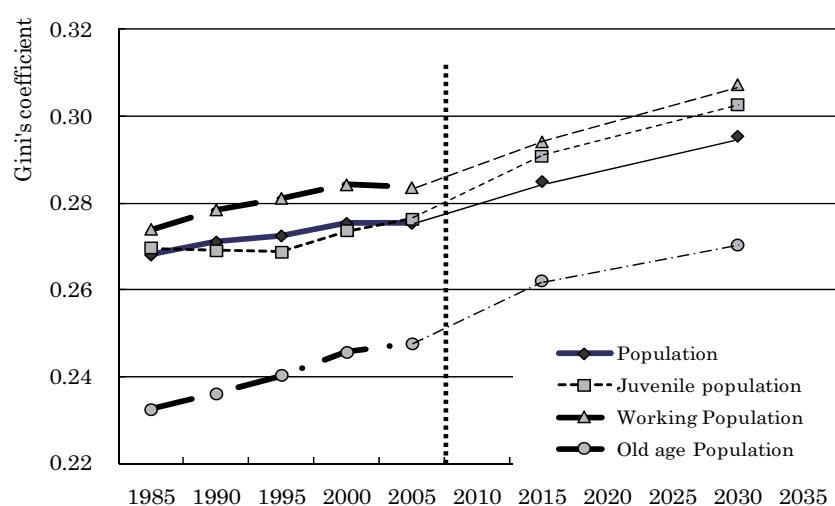
Conversely, prefectures in which the population densities are small are Hokkaido, Iwate, Akita, Shimane, Kochi, Aomori, Fukushima, Nagano, Tottori and Miyazaki. While the area in these 10 prefectures is 46.7% of almost half in the total area of our country, the rate of population is only 13.5% in 2005. The population density in Yamagata will drop in 2035 and be replaced with other prefecture in the order, as in Table 1. Even though Yamagata is added to 10 prefectures, the percentage of population in 11 prefectures will be only 12.8%, while their land area is 48.5%. Its population's rate is almost equivalent to 11.5% of Tokyo of which area is only 0.6%. In addition, these prefectures are the population densities less than 150 person/km², while Tokyo is over 6000 person/km².

Fig. 3 shows the Gini-coefficients of young population and aged population on prefectures, too. The Gini-coefficients in 2005 for aged generation are smaller at 8.4% than the coefficients of young generation and population. This means that the aged persons remain in a village more than young people and aging in village has advanced. However, even such aged population will concentrate to Tokyo in future, and the Gini-coefficients will become larger. The imbalanced differences among prefectures will become serious more and more in all of generations.

2. 2 Enlargement of disparities among districts in Fukuoka Prefecture.

If researching the disparities among districts in the same prefecture, we can also find the remarkable differences of populations among cities and villages. The main findings are the concentration of population into the local capitals and the drastic decrease of population in the intermediate districts and mountain areas. As an example, the case of Fukuoka Prefecture is shown as in Fig. 4, of which the size of population is order of 7th in all prefectures. Besides, divisions of cities, towns and villages in Fukuoka Prefecture were transformed on a large scale by the merger promoting system in the Heisei era. In this study, the data of 99 municipalities in 2005 are used.

The total population in Fukuoka Prefecture and 3 groups of young, working and aged generations have been



Year	2005	2010	2015	2020	2025	2030	2035
population	0.271	0.274	0.278	0.281	0.284	0.287	0.290
Juvenile	0.272	0.279	0.284	0.288	0.290	0.292	0.295
Working	0.280	0.283	0.288	0.293	0.297	0.300	0.302
Old age	0.242	0.248	0.253	0.255	0.258	0.264	0.271

Based on cities, towns and villages in 2000

Fig. 4 Gini-coefficients on population of cities, towns and villages in Fukuoka Prefecture

increasing from 1985 to 2005 and all of 4 Gini-coefficients on relevant populations are still enlarging. Disparities among districts are expanding at Fukuoka Prefecture. The disparity of working populations among districts is larger than the one in population, while the difference of young population is nearly same as the one in the total population. The Gini-coefficient of aged populations is smaller than other coefficients on population, because the aging in villages is progressing.

The Gini-coefficients on populations in 2015 and 2030 are shown by fine lines in Fig. 4, which have been estimated by the use of merged divisions in 2005. According to the results, the changed trend of their Gini-coefficients will be about as similar as ones in these past years. The Gini-coefficient of population in 2030 will be 0.295, and those of working people and young population will be over 0.3. The disparities among districts will more and more enlarge in all generations.

Populations until 2025 in Fukuoka Prefecture will exceed it in 2005. However, the population in 2035 will decrease about 1.3% and become under than 5 million. The districts of which populations in 2030 will be larger than the one in 2005 will be almost limited into Fukuoka City and its surrounding cities. Except for the part of areas such as Fukuoka City, the population in each district will decrease.

In 2008, the recent prediction of populations was announced by the same Institute on the basis of new data of the census⁵⁾. However, the populations were estimated under the system of municipalities prescribed in 2008, in which cities, towns and villages had been merged into 66 from 99. Of course, the estimated coefficients cannot be directly compared with ones of the previous estimation as in Fig. 4. So, the results are presented with the table of lower half of Fig. 4. Although the slightly lower values of Gini-coefficients are estimated under the influence of the merger of municipalities, the changed trend of Gini-coefficients in 2030 to 2005 is almost same to the previous predictions, and the coefficients in 2035 have also same trend.

After all, the imbalance between the large city and the local area is expanding and the differences among districts in a region are found additionally. The doubly overlapped disparities will trouble the region more seriously, and the number of abolished districts in the region will increase. Therefore, the further effective strategies on the country and the region will be needed for the future in the right understanding of present serious conditions of regions.

3. Present conditions and issues at the multi-hierarchical network structure of the national land

3.1 Multi-hierarchical network structure of the national land

Many cities and towns in our country have suffered the war damage at the former Pacific Wars. From that reason, many cities were hardly developed till about 1960 and have not advanced so much. The function and the activity of the city were un-differentiated clearly. On other hand, there was rather the vitality in farming villages because people worked hard at the food production to eat.

After all, the national land structure in 1950s or 1960s is depicted as in the left of Fig. 5. The hierarchical structure on our country was formed by ambiguous relations of three major cities, nucleus cities, local central cities, and surrounding districts, in which Tokaido megalopolis was framed under the line-up of areas of Keihin, Chukyo and Kansai. The disparity of the role on urban functions was not so serious and was almost limited into the range of region, and roles of cities overlapped each other.

Then, people and goods have concentrated to the capital and major cities, and differences among regions have enlarged under the trend of urbanization in accordance with the economic growth. The same disparities structure of region was also created among the local metropolis and their surrounding areas.

The power of Tokyo has grown up more in comparison with ones of Osaka and Nagoya, consequently. In the national land network, roles of metropolitan areas of Osaka and Nagoya have changed from the side-by-side level on Tokyo to the vertical relationship.

Because of these changes, many cities were incorporated into a part of the vertical pyramid structure with many hierarchies, which linked lengthwise to the capital as shown at the right in Fig. 5. Functions in every field such as politics, business, culture, etc. have been assembled into Tokyo metropolitan area. In the meantime, functions of cities, which are vertically connected with the upper cities, have individually been assigned in each region without the lateral relationship among cities. Their roles for the areas on lower stratum surrounding cities have been shrunken. Under such a structure of the national land, the large disparities between the capital and the region have happened. It is also same as to the relation of large city and small city. The stratum in network of national land structure have increased and the structure of lengthwise overlapped network has been formed.

The conventional structure of 4 stratum was transformed into 6 or more stratum, now. Besides, we can find the differences with Tokyo of Sapporo, Sendai, Hiroshima and Fukuoka, as well as Osaka and Nagoya. The disparities at the potentials of economic developments among the local capital cities and the regional central cities have been also expanded. As shown in Fig. 5, the structure of the national land has been changed to the lengthwise network system.

The pursuit of the economic rationality for development and the construction of high-speed transportation facilities have resulted into the formation of vertical network structure with many stratum. It may be said that this structure of national land has been created necessarily with the economic growth.

Such design of the national land is not desirable at the standpoint of regions, however. In the region, the balanced development of the national land under the multi-polar diversified system is sincerely hoped.

At the viewpoints of the region, one of issues on the vertical pyramid structure of the national land is the dissatisfaction with which many functions of the region will be sucked up through the straw-effect from districts on lower level into cities of upper level. The capitals take a role of leader on the country, by which the activities in various fields will become enlarged. Several local capital cities have the leading functions as the center of the region with the local agencies of the government, too. From these results, the regional disparities on the social functions and economic activities are enlarging. Many cities and towns are connecting with the metropolitans and overlapping under the capitals. However, we never hope such a national land structure in the local region or the district.

The second issue is that the linkage among regions has been weakened. For example, the connected activities between the Fukuoka area and the Hiroshima area are shrinking. Except for the tourism and the exchange among the neighboring areas of both regions, many linkages on economy, culture, science, education, etc. have been

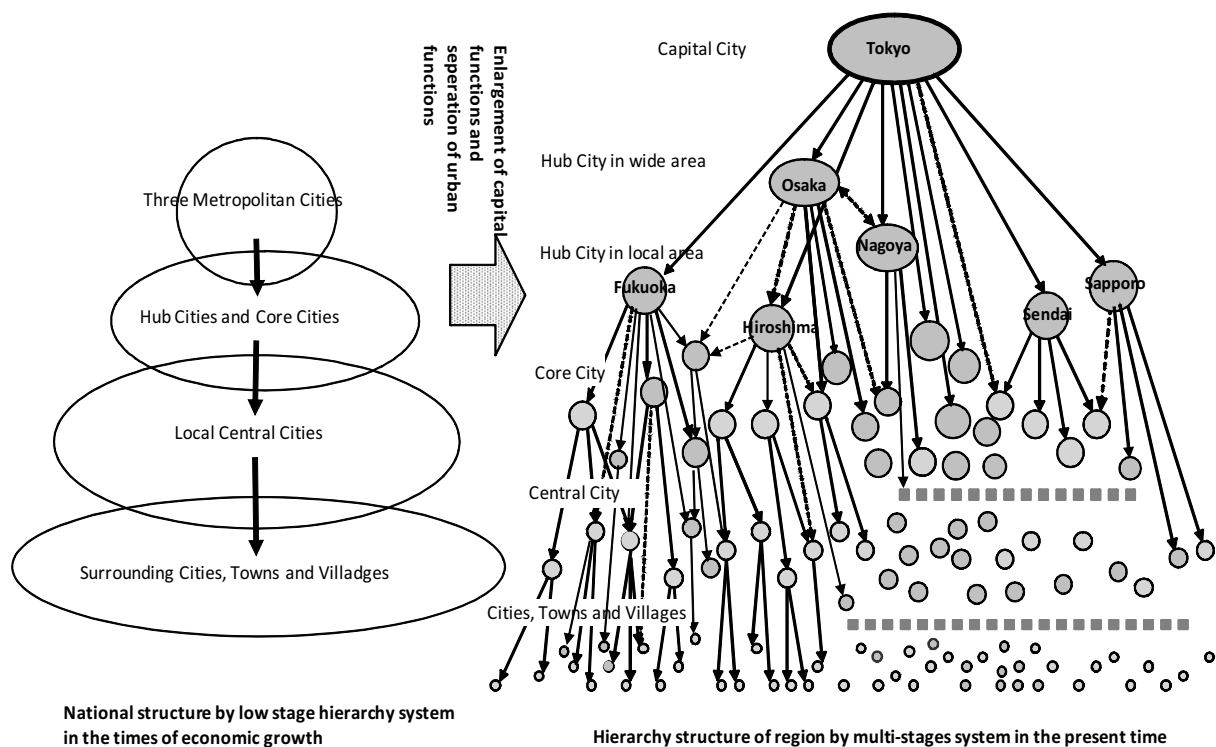


Fig. 5 Vertical networks of national structure at the past and the present

weakened. And, instead of these linkages among regions, the connections between the capitals and the regions are being strengthened.

The third problem is that the relations on daily activities among districts in a region are also shrinking. Districts in a region are weakening the connection with remote areas in other regions. The horizontal relationship of local to local is disappearing and hardly may be grown up. In this situation, if the upper-level cities will weaken with the industrial innovation and the confrontation of international relation, the relevant cities and towns, which link with the upper-level city, will become weak simultaneously.

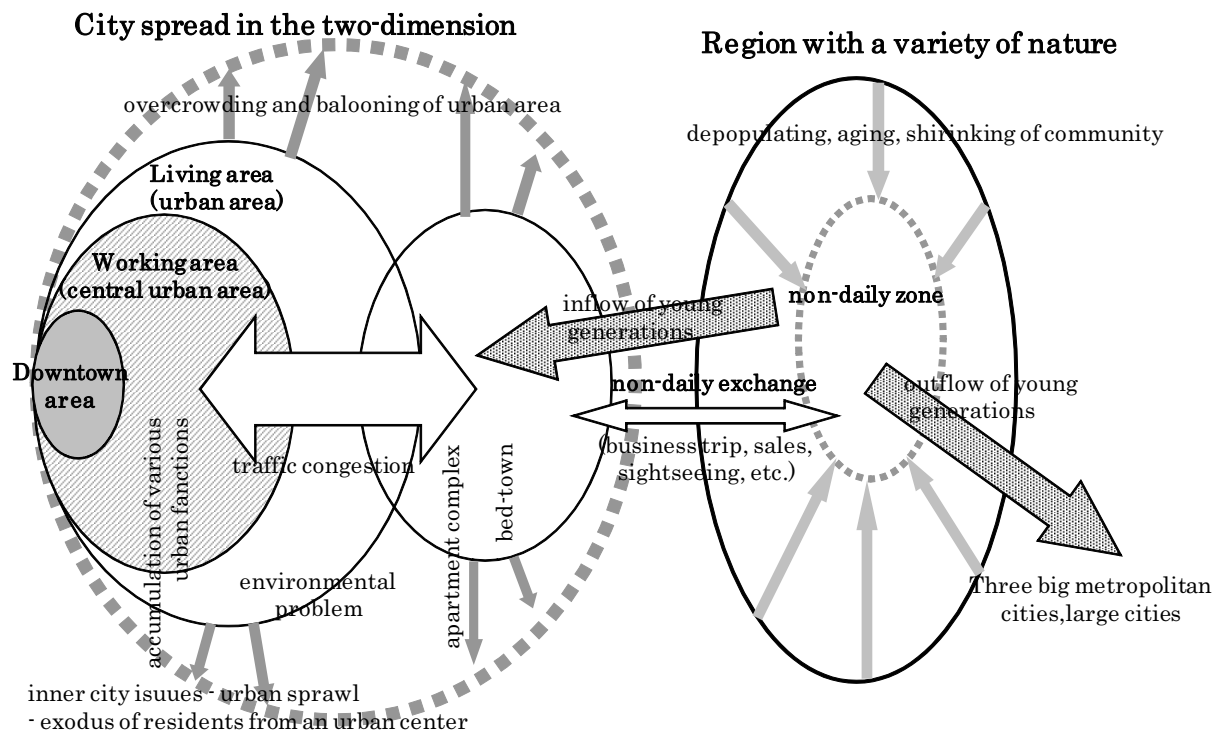
Growth of the network of the national land structure has only driven a wedge among regions, according to the viewpoint of the region. While the lateral connection is weakened, our country has built the lengthwise system of vertical network. As a result, the balanced development of the national land has been hindered. The region is suffering from the expansion of disparities and concentration into the capitals and the imbalanced formation on the national land is advancing more.

3. 2 Structural change of region

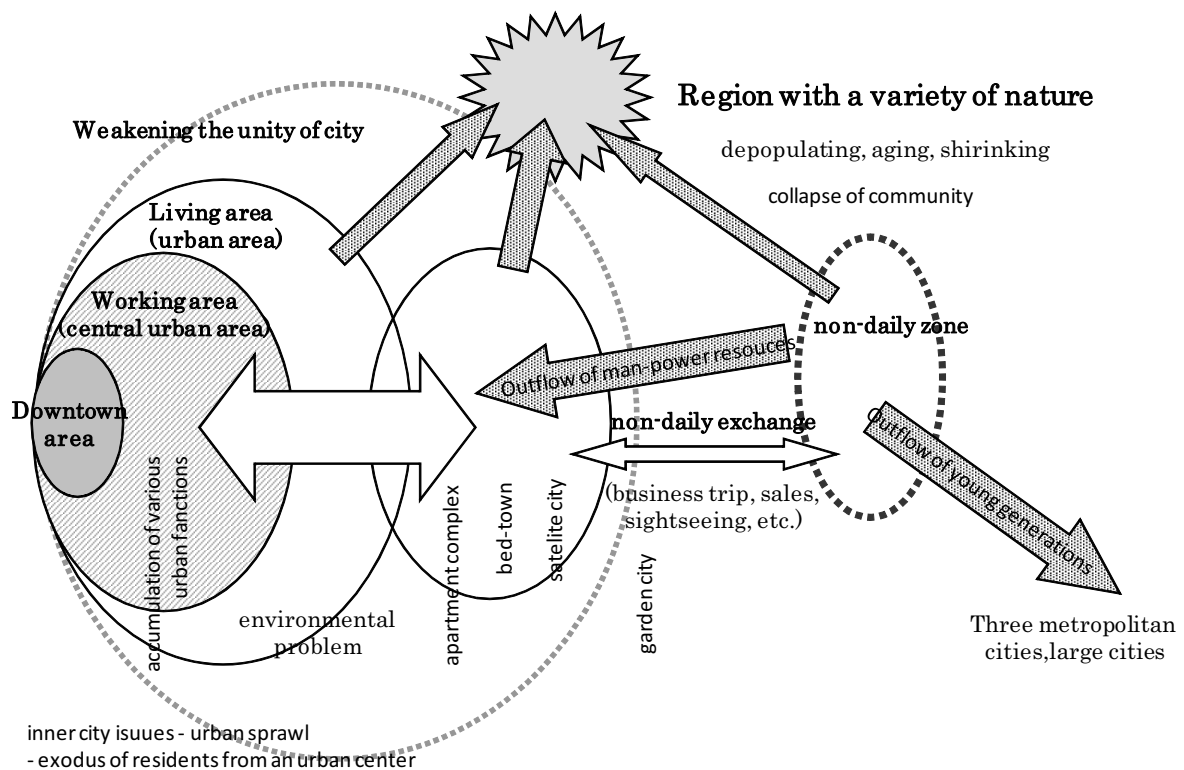
The sphere of region is roughly defined as the daily living area with the core in regional central city. And, even in the three major metropolises, their domains for daily activities are limited, if removing the functions of centrality of the wide regional block or the country.

The region is the complex of districts, in which many characteristic districts from the nature area to the urban area are included. And, the vertical network structure as similar as in the previous section should be formed in such a region, if considering the necessity of the powerful potentiality to unify the districts. Nevertheless, the inner structure of region is changing in recent years and problems on the formation of region are getting serious, too.

Fig.6 (a) shows the skeleton of regional structure and the conceptual image of regional issues. Human resources doubly shifted from the rural areas into three major metropolises and the relevant central cities. As the result, depopulation in villages is advancing abruptly with the shrink of human resources, and their economic activities are lowering relatively.



a Changing structure of regional zone under the process of urbanization



b) Transforming of the structure of regional zone by the establishment of the large-scale retail stores in the suburbs

Fig. 6 Conventional regional structure and regional issues

On the other hand, working area and living area in the city are separating, and the urbanized area is spreading toward suburbs, because of the enlargement in the scale and activities of the city. Therefore, the city has been successively developing. Many districts in a region were stratified by the enlargement of cities and the depopulation of villages. However, the region is suffering this new structural change, recently. Some public facilities, hospitals and universities have transferred to suburbs at the chance of renewal or the enlargement of scale. Under the progress of motorization and the development of economy, large scale customer's facilities were developed into the suburbs because of the geographical convenience. From such conditions, a lot of customers and urban functions have flow out to the suburbs, and the central district of the city falls in a vicious circle. The unity of local areas was destroyed in the sense of shape and size.

Namely, the image of the present structure of region is shown as in Fig. 6 (b). The large facilities for customers settled in the suburb, and they were accepted by citizens as the convenient and useful facility with the motorization. The activities in the inner district of the city have been sucked up and weakened the unity of region. Even in the suburb of city, the conventional urbanized districts have been cut the connection with the new towns and surrounding natural areas. From these facts, the communities and various functions for living have become outdated. This is the crisis of the local area. In the same meaning, it will tie to the dilapidation of the country which is the assemblage of local areas.

3. 3 Issues on region

The crisis of the collapse of regions which are defined as the daily activity block is never a special case, because our country entered the aged society. As the districts that seem the situation of collapse are found in many villages even now, the regional problem has the deep-rootedness and seriousness unavoidably.

Aged people almost desire to live to the end of their lives in the same village even if depopulation, because they have the fondness and long experiences on living in their village¹⁾. Therefore, serious issues of the region must be studied thoroughly and the national land plan for the sustainable development of regions should be made.

If the basic structure of the region is shown as in Fig. 6, it is the complex of cities, natural areas and intermediate districts, and we can find several issues on each district in the linkage of areas. The issues on the expansion of urbanized districts and the decline of the central area of city may be found by the social relations or economic activities between the surrounding areas of city and the multiple nature areas. Otherwise, the issues of the rural areas are conceived in the relation with cities. Therefore, the issues of districts are not always independent, but also relative each other. If classifying such problems at the view-point of the relationship of districts, we can find the total system of regional issues as in Table 2.

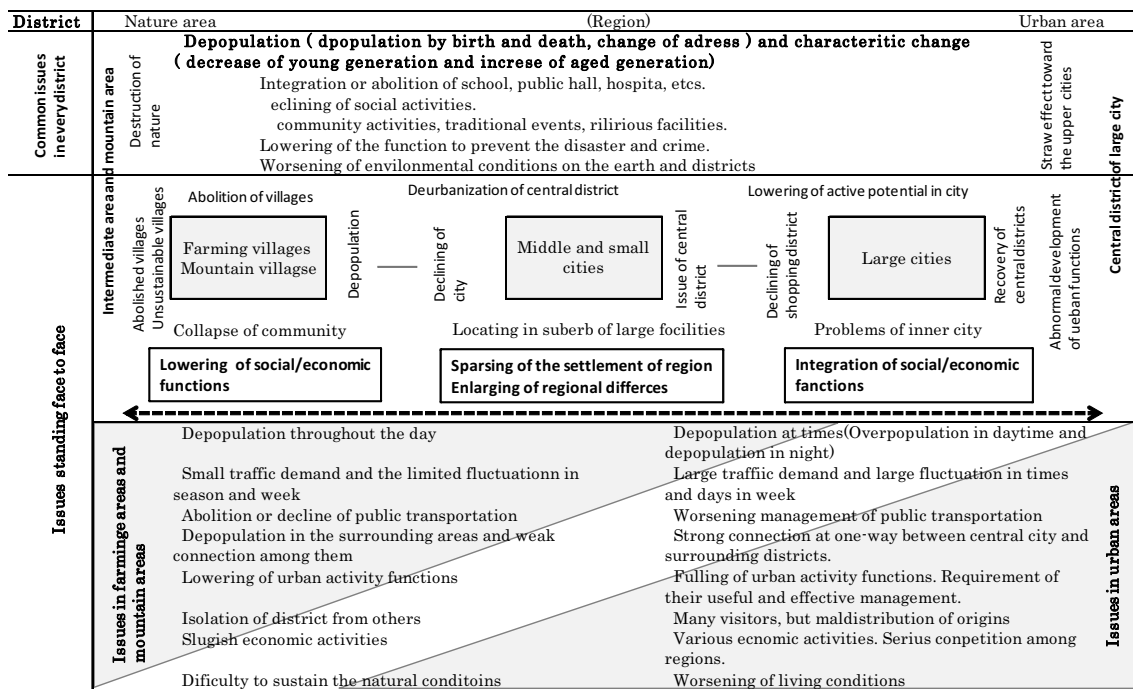
The region is formed by the serially linked structure of a central city, medium cities, small towns, rural areas and mountain areas. As in the table, issues for intermediate districts in the region are comprehensive contents on the unity of region, main issues over the region and functional problems of regional activities. From these issues, the concept of regional problems is systematically disclosed, depending on the attributes of region and the potential for expansion. Under this idea, the problems common to districts in the region are shown on the upper half of the table, and the opposing issues are described on the lower half.

If excluding a part of regions, the issues common to districts in the central city and the secluded mountain are the depopulation of districts and the drop of young generation. The lowering of functions to prevent disasters and crimes is also the main issues at both of cities and mountain areas. The global warming is a big problem over the earth, and we should struggle to resolve it in every place.

In the comparison of cities and rural areas, there are the rival problems in each area, which have the different characteristics depending on the districts. They are classified into the urban issues and the problems of mountain areas, as shown in the table of lower half.

One of the main issues in the city is the separation of the working district and living area, which is caused by the change of the structure of city. At that condition, the large fluctuation of traffic demand is repeated with each

Table 2 Structural diagram of regional issues



time. The heavy congestion on roads and the inefficient operation of public transport are forced. While the various functions in a city are developed, their management is not enough effective. Besides, on the competition of economic activities in internal and external areas of the region, the de-urbanization of city is feared. There is also the issue that the conditions of living are being worsened.

On the other hand, the decline of services on public facilities and public interests and the lowering of social activities in community are serious issues in the mountain area.

In the intermediate district and mountain area, there are significant problems as for the depopulation. And, problems of the lack of public transportation and issues of the weak on traffic have become remarkable. A lot of persons in their areas have no chance to get a job, because of the slump of economic activities. It is also difficult to sustain the scenery and fine environment of rural areas.

Issues of urbanized areas and mountain areas as mentioned above are the characteristic problems in each area. We can find them to other intermediate areas, however. As shown in the table, the urban issues appear strongly at urbanized districts, and weaken with changing from the city to the mountain area. Similarly, problems of the mountain area appear remarkably in the rural area and disappear at city. Such images for the application of regional problems are shown by the shaded triangles as in the table.

After all, there are the peculiar issues on each area. Meanwhile, there are also the issues common to every area, though the area has the different characteristics. The additional problems on areas will be given as if to be tucked up with a cord. That is, it is not significant to apply the regional issues to districts individually, and the effective strategies for district cannot find. It is important to understand systematically regional issues with the region structure.

4. New concept for a region and strategies for regional issues.

4.1 Proposal of the new concept for a region

After the concept of a region is obtained adequately and the regional issues are studied, the problems on the national land formation should be discussed. In that case, it is the important key how to remove the irrationality on

the present regional structure and how to resolve the local problems discussed in the previous chapters toward the ideal style of the region.

Fig. 6 (b) shows the present structure of the region. It represents the region of which a unity may be lost. Contrary to such present conditions, the region is desired to join individual areas and districts and they are tied with the central city. Therefore, new concept for the region will be expressed with the revision of the present plan for the wide block.

Basic area of region is the daily activity domain of which core is the central district of city. And, considering on the urban potentiality and self governance of region, the central cities in our country are given by three big cities, local metropolitans and nucleus cities. The national land cannot be completely covered by domains in these central cities, however. The potentiality of central cities is various and its strength is given individually. It is not always enough to unify the region, and districts not to belong to region are found often. The formation of the region should be considered together with the decrease of population, selecting the central city carefully.

The working area and the living area in the central city are the daily active area. They become the core in the region fundamentally. Besides, there are other districts to visit daily for work and business.

- (1) By the development of transport and communication facilities or by the progress of motorization, the activities on business became animated and spread to suburb towns. Besides, many related facilities such as industry have moved from the central district to suburb areas and they are still related to the central city. From these results, the daily area with activities in urban function tied to the central city can be found. This domain is named a special daily function area.
- (2) Days in a year are roughly divided in halves of weekdays and holidays. The experiences of usual activities in weekdays and relaxed activities in holidays are repeated in almost same frequency. So, in the suburb districts for activities on holidays, recreations, sports, events and other outdoor activities are experienced and those areas in suburb will be named the relevant weekend space. The relevant weekend areas may be related with the working areas and living districts of the region.
- (3) As another one thing, the fifth area is defined as the remote area to be visited sometimes for tour. Many citizens will relax at the remote area. They can spiritually experience the leisure activity and the unusual activities though they cannot always return in a day. This remote non-daily area is also related to a central city.

As mentioned above, the new concept of a region is given by 5 actual spaces; working areas, living districts, special daily functional areas, relevant districts on weekends and remote non-daily areas. Needless to say, these spaces are not always assigned in each district one by one. The special daily function areas may correspond to a part of working areas in the other region. The recreational areas on weekends may be the remote non-daily areas for the other region. The various areas in other regions may link as the remote non-daily areas, here and there.

In the present society, there are also the functional spaces to exchange actively at the use of transportation and telecommunication. This is the virtual space which is shown by the assembly of arrows at the chart of a region. The urban activities are strongly depending on the virtual functional spaces. Even the activities for shopping, business and so on are doing with the virtual functional spaces. When such an activity will develop more in future, the virtual space is assessed as the sixth important space in the region.

In brief, new structural concept of the region is shown in Fig. 7. Generally, the remote non-daily areas exist at other region. If the region is defined in the narrow sense, the domain will be given by 4 realistic spaces except for the remote non-daily area. And the addition of remote non-daily area connects the region with another one. The network has the various functions of industry, business, residence, culture, etc., which are developing into the wide ranges under civic sense of various values as shown in the chart.

The remote non-daily areas for the region overlap with the working area and the weekend area in suburb. The dispersed spaces for daily working, living and special daily activities may be linked also with the remote non-daily area in the other region, because of the lively activities of urban amenity and tourism.

Under these conditions on the connection of areas, the region is not separated definitely on the map by the

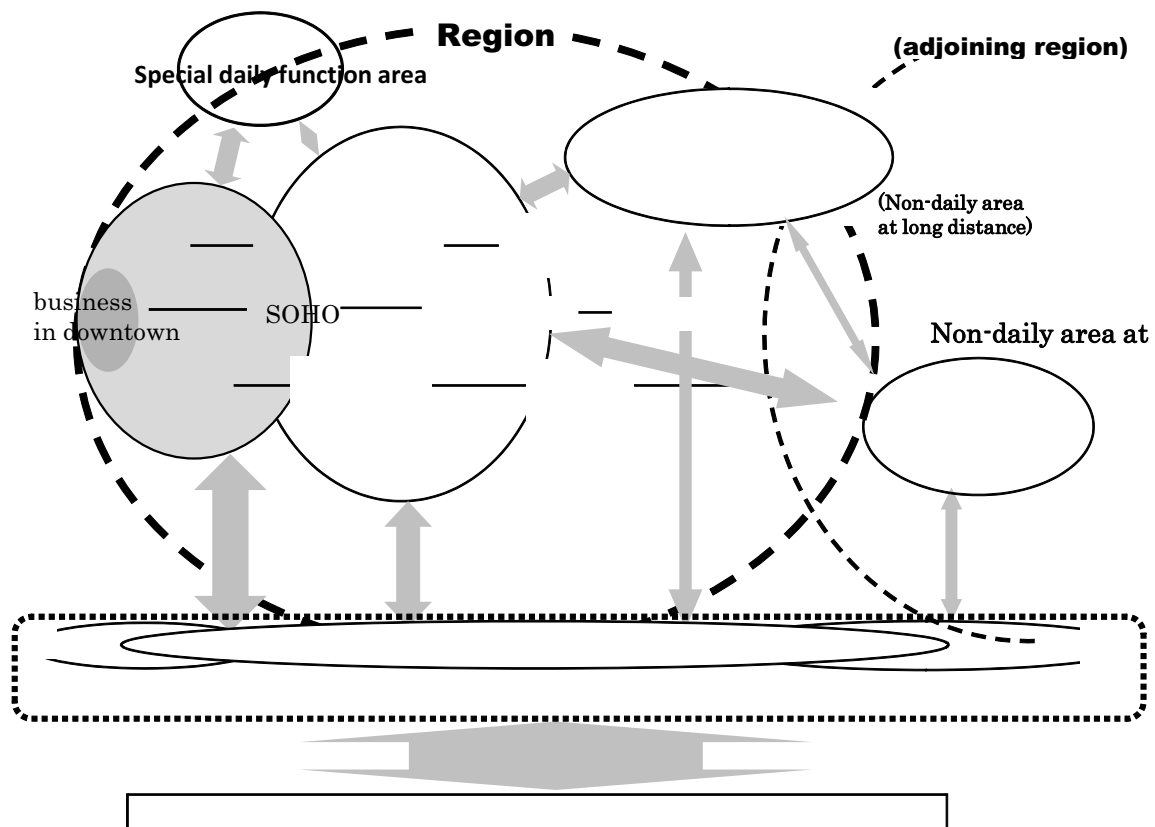


Fig.7 Proposed structure of the region

border lines of each area. Every area is connected and networked by overlapping of districts. In this meaning, the regional block will be individually defined by the size, form, and contents of each area, while the central city of each regional domain is allocated on the map. Namely, the region is obtained overlapping on the map and sketched individually.

The formation of virtual space in each region resembles the fact that Web multiplies himself on the Internet. Districts in the region are connected mutually through the virtual space and the local areas are easily tied to the internal and external areas of the country. As a result, the regional network will be serially and closely connected each other. This is the wide regional block, which is an organization with several regions.

4. 2 Policies and strategies for issues in the new regional structure

If defining the new ideal region described as in the previous section, the policies to resolve the regional issues are different from the conventional concept of region shown in § 3.3. Considering the regional issues under the network of districts, the new region should be formed and made active. The basic concept is the development of high-dimensional networked society which includes the different contents of daily active areas, special daily active areas, relevant spaces on weekend in suburb, remote non-daily areas and virtual spaces.

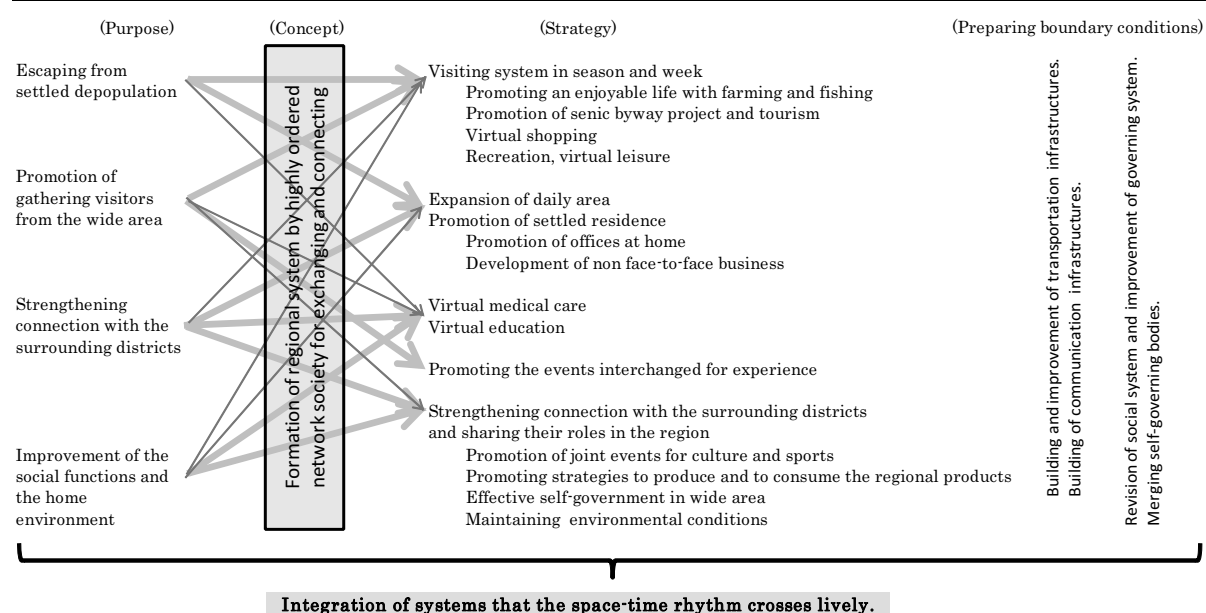
In the region, the city and the nature area are faced with the settlement of residence in each position. The former is to build the powerful and compact town, and the latter is to sustain the healing forest area and the scenery town for residence and farming (See Table 3). In the intermediate districts, the strategies for two types of areas will be adopted partially and mixed.

With that in mind, the issues for each area should be tackled individually under items such as the self-government organization, the procedure of public interest service, the promotional plan for development of region, and so on. And they are composed of four policies depending on the relation with the region.

The first policy is to consider individual issues on each district in the region, resolving the issues faced on the

Table 3 System of issues in a wide regional block and a region

Issues	Natural area	(region)	Urban area
Purpose of regional plan	Building of the healing forests and scenery villages Use of the regional resource, the expansion of the exchanging population, and the different sense of values		Building the compact and cheerful city (Fair assignment of different urban functions and facilities, effective use of public transportation, and so on)
Self-governing body	Integration or abolition of self-governing bodies Cooperating community	Decentralization Voluntary body by citizens Establishment of full functions for prevention of disasters and crimes Establishment of the supporting system for emergency	Distribution of power for self-governing to citizens Self-management and self-operation
Public services Business for public interests	Minimum guarantee for living Strengthening of public support	Establishment of a connecting system (Combination system)	Optimized supply Business of management and operation
Promotion of regional development	Cooperation of population for home village (Supporting the local activities)	Center of region support Promotion of road station, etc.	Antenna shops Special products in region
Promotion of tourism	Open-air school Green tourism	Tourism by experience Wide range tourism	Scenic byway project Urban type of tourism
Environmental problems	Production of natural energy Sustaining of nature and farming field		Use of natural energy Escaping from carbon society Control in the use of urban land Development and improvement of green spaces Citizen's movement, contribution for social activities (Voluntary activities, NPO, community activities, etc.)



urbanized districts and mountain areas, which are items shaded with triangle as shown in Table 2. For example, the services for public interests such as the public transport or the medical care are managed mainly in the urbanized area. A basic idea of these strategies is that the convenience will become greatest under many conditions.

On the other hand, the small demand of public interests is in intermediate districts and mountain areas, and we can find hardly the economic strategy that will correspond with the demand.

At the mountain area in which the demand is extremely small, the problem to guarantee the minimum social activities must be resolved strengthening the supporting system by public organizations such as municipalities. The policies for the intermediate area will be applied doubly by the strategies for both of city and mountain area. In this case, the strength or weakness of the application of those strategies will be given if necessary, and the policies which are accepted to people of district shall be found.

The second policy is to fix the system for interchange and cooperation among districts as a pillar of strategies, in the use of the above-mentioned concept of the development plan. In an intermediate district and a mountain area, the strategies to promote interchange and cooperation among cities and other rural areas may be found. As sales promotions and economic strategies to support the district, antenna-shops will be set up in the city under the fundamental target of people who flew out from their home town. To deepen mutual relationship of cities and rural areas, it is useful that strategies exchanging at road's stations or town's stations, at which their contents and events are

enriched, are promoted. Besides, the circulating system in which the natural energy is produced in rural areas and is consumed by people of cities will be proposed as a policy for the use of the natural energy related to the environmental problem.

The 3rd policy is the procedure and system to unfold individual strategies which depend on the characteristics of district. As a typical example, there are matters of the tourism business. In a mountain area, the strategies of green tourism and open-air school are developed, while the urban style of tourism is in a city. Furthermore, the widely circulating tourism, scenic byway travelling and out-door recreation are proposed in an intermediate area. Therefore, the total system of these tourism projects in individual areas will be needed to obtain the unified system of inbound and outbound travel and to get the satisfaction of visitors from the wide range of the region. The travelling in the region will become attractive much more by the systematic combination of tourism of each district with competitive efforts and mutual cooperation.

As the 4th policy, the project to tackle with all of regions is needed. Emergency strategies for rescue operation, an environmental issue on the earth, etc., cannot overcome in the individual areas, and every district of the region should co-operate each other. In these projects, the central city in the region should take a role of coordinator.

Under the 4 types of policies, issues of the region must be studied and checked for the planning. Nevertheless, there are some issues which take no review on the standpoint of individual districts. They are the 5th policy for the regional plan.

The upmost serious issue in it is the existence of intermediate area or mountain area, which are remote from the central city. If focused on the depopulated districts, the additional strategies in the 5th policy are shown as the table in lower half of Table 3, which might overlap partially to the above-mentioned other policies. The issues in the intermediate area are summarized as in Table 2, which are 4 purposes; putting the brakes on the depopulation, assembling visitors from wide areas, strengthening the connection among areas, and filling the social systems or functions for living. And, the strategic examples for them are shown at the right-side column of the table.

There are the strategies of events opened in the weekend and season. Setting high speed transport and introducing industries, districts for residences will be built by spreading the commuting domain. Besides, it is proposed to unite the resources in a region and to establish the linkage of medical system or educational system through the virtual space.

Of course, it is difficult to put all of these various strategies into policies and the reasonable choices of strategies will be needed to build the region. Strategies will be affected on the evaluations of how to link each district, how to use effectively regional resources and how to overcome the drastic shift of economy and society.

5. Desired national land structure and its planning procedure

The national land structure at the present time is shown in the chart of the right of Fig. 5 and the simplified chart is also shown in Fig. 8 (a). The national land structure is the vertical network with multi-stratums, and Tokyo is located at the top of the vertical network. The infrastructures for transport and communication have been constructed in the origin of Tokyo toward the local areas to respond to demands of transport and information, and to promote reasonably the economic activities in our country.

As a result, public infrastructures in the large central cities such as the capital have been got ready on the earlier step. Therefore, the vertical network structure of the national land has developed more and more. The disparities between the big city with economic growth and the depopulated area have become striking. If viewing it from the regions, there is the great dissatisfaction on the national land structure.

The main issue for us is how to image the skeleton of national land. From the viewpoint of the region which is the upmost basic element for the national land structure, the horizontal network without the vertical relationship is wished and the balanced development on the national land is desired (See Fig. 8 (c)).

Fig. 8 shows our proposed concept for the structure of the national land. The structure is the assemblage of

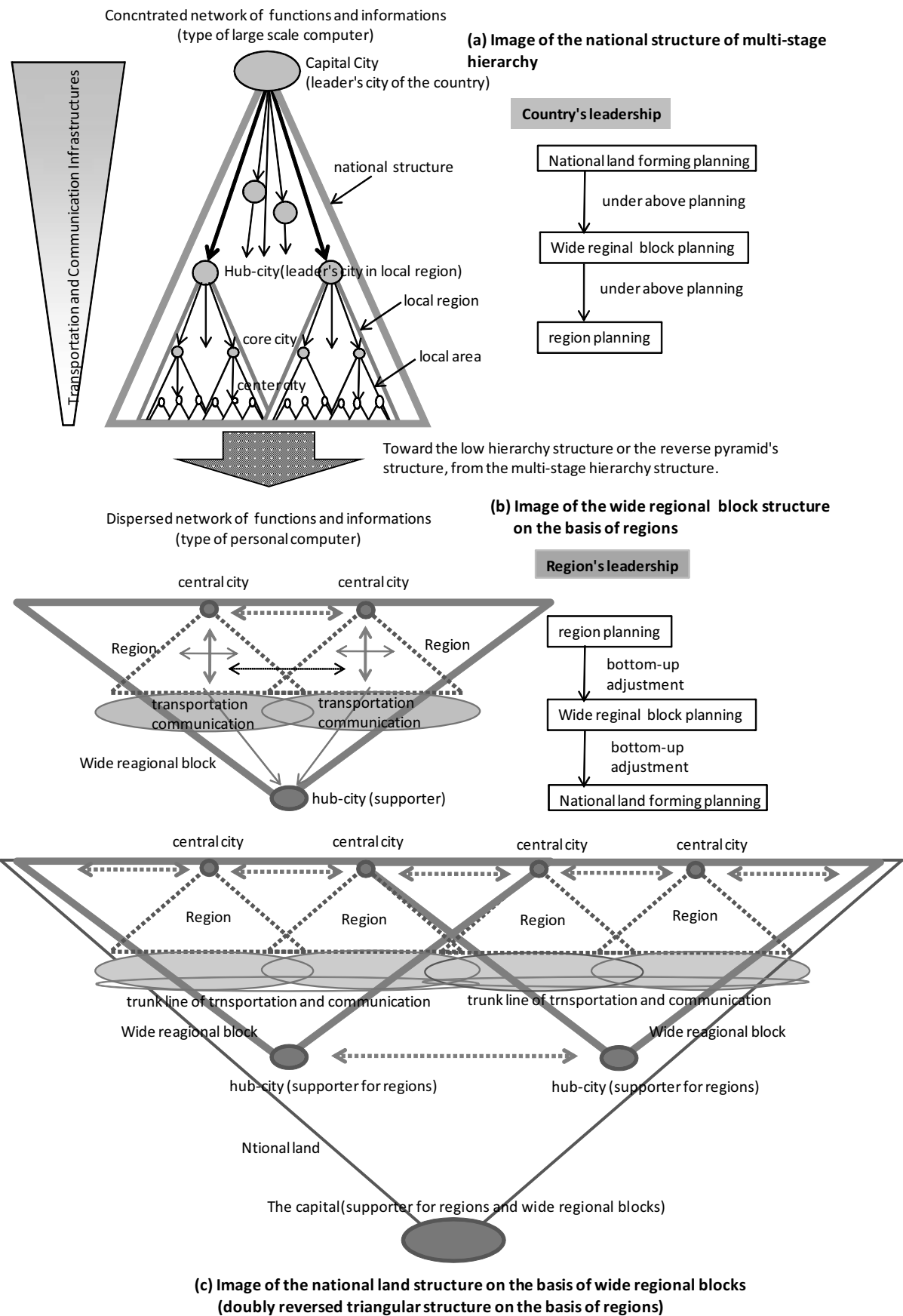


Fig. 8 National land structure

districts, regions and wide regional blocks. The region was discussed in detail in chapter 3. The wide regional block is introduced newly in this chapter, which is similar to the provinces in the governance system of our country. The skeleton diagram of the wide regional block is shown in Fig. 8 (b).

In the wide regional block, the vertical network will be limited into a few stratum, in which the central city has to be a core for the competition with other blocks. On the other hand, the horizontal connections among regions in the block will be hoped in the fields of vital activities depending on features of the region. Besides, the horizontal relationship among the regions and the sharing of their social or economic roles are expected. Under the progress of high speed transportation and motorization, formation of such network will be preferable.

The concept of the wide block is systematically built by the complex of regions. The power for competition and the potentiality for activities of the block are needed as it stands. In this sense, the capitals and the large cities will become the hub cities in the block. Then, the horizontal relation among regions is important and the role of the hub cities is not a leader in the block but a supporter. That is, the wide regional block will be obtained by the combination of regions, which form the reversed triangle of regional system.

As the system in the network of advanced medical care or high public services for the region, the large city must take a central role in the settled domain. In the case of emergency, the central city will be the core of rescue operations in its region. For the environmental issue, the central city in every region also takes a role of the coordinator and promoter. For the development of new industries, the large cities will be the incubators. They will contribute to circulate regional products and resources and to help the analysis and interpretation of information on the network. Besides, the role of supporters to sustain the scenic terraced rice fields in the rural areas and the healing forest should be taken by the cities.

In the establishment of the supporting systems of regions, the structure of the wide regional block will be presented by the reversed triangle as shown in Fig.8, which is unified as the systematical regions.

To build up a region and a wide regional block, the foundations of transport and communication will be systematized and will be added as the skeleton of the region and the wide regional block. The neighbor region will be tied mutually by the infrastructures and 5 spaces in the region will work smoothly. This is not the concept that originates at Tokyo. Transport and communication system which ties regions and districts even in the wide regional block should be basic foundations and will be built by the linkage with the network of the systems of the region.

As for the reversed triangles of the wide regional block, we can get the structure of the nation with link and expansion of them (See Fig. 8 (c)). The supporting role of Tokyo is desired on the establishment of the horizontal relationship between regions and local blocks. Although Tokyo is the one of regions, it is also the supporter for regions and wide blocks, which means right the capital city.

In short, regions are the basic elements in the national land structure, and the network of 3 stratum for the national land structure will be formed, in which the mutual horizontal connection among districts will be stressed. In this network, the capital and the hub cities under the wide regional blocks will take a role as a supporter.

Planning of the formation of national land does not always need to be under the lead of the central government. Starting with the regional plans, the procedure of adjusting and piling the regional plans will be useful to prepare the national land development plan. If reflecting on 5 conventional national plans and thinking the coming of the times of local government, the above procedure will be useful to build the national development plan.

Of course, even if the local government is fundamental, the role of the central government is still significant to make the national plan and regional block plans under his leadership and supporting. At the same time, the central government will be required to take a role of adjustment among the regional blocks and the nation. The central government should take the responsibility to propose the basic concept, fundamental policies and elementary strategies of the formation of the national land, yet.

6. Conclusion

At the national land formation plan which was decided by the cabinet meeting, the concept of the national land was described by the set of sliced wide blocks in our country. And it can be seen that every wide block must be established on its own, while Tokyo is still positioned to the top of vertical network of our country. Namely, if looking over it from the viewpoint of the region, it is doubtful that the balanced development of the national land will be obtained by the plan. The population and every activity of society and economy will concentrate into Tokyo more. We certainly have been able to endure these issues at the increase of population in the past. However, in the process of depopulation, the regions cannot obtain the prospect to the national plan kept with the relationship of trade-off among the concentrating capitals and the depopulating regions.

In this paper, referring to the conventional national formation planning, how to build the region as the basic element of the national land was studied by the consideration of the revised relationship between the national land and the regions. Results are summarized as follows.

- 1) The revised idea of a region, which was studied in our previous papers^{7), 8)}, was proposed newly. The region is defined by the network system, which composes of 5 spaces and one virtual space as in Fig. 7. Physical spaces are the working areas, living areas, special daily function districts, relevant districts on weekend and remote non-daily areas. The virtual space is the transportation and communication network system to link 5 spaces. This concept of the region stands on the idea that the individual formation of the social system in the local areas is not feasible, because the disparities between the overpopulated central cities and depopulated local areas are largely advancing. The basic concept is originated right in the formation of the region, in which the main target on the existence of regions is the cooperation by the interchange and linkage of each districts in the region.
- 2) As in Table 2, problems in each district of the region and the wide regional block are systematized on viewpoints of characteristic individual problems of districts, problems of the linkage among districts, issues of the friction among areas and problems common to districts. 4 kinds of policies for these issues are summarized as in Table 3 and their strategies are proposed.
- 3) The proposed structural concept of the national land aims at the national development plan to rebuild the regions which are doubly suffering the regional differences. The plan will promote independently in each region and each wide regional block, and stands up the idea that Tokyo will be the one of regions and that his function as the capital supports the regions. Furthermore, the plan aims at the transformation into the reverse double triangle network of national land from the vertical network. In brief, the plan for the national land structure in this study is the proposal for rebuilding of the regions and the wide regional blocks requiring immediate attention.

Our proposal for national land may be paradoxical if anything, because of criticism of the official plan fixed by our government. However, it is true that the region could not resolve the critical issues in each plan in spite of a lot of efforts in the past. Besides, the enough understanding on the serious conditions of the regions is needed to make the development plan for the national land, when facing the collapse of the local area. From these considerations, the national land of the network of doubly reversed triangle, which is built in every region and every wide regional block, is preferable for us, and we should discuss in detail about them at various chance of regional planning and the national development plan.

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