

1. Basic concept

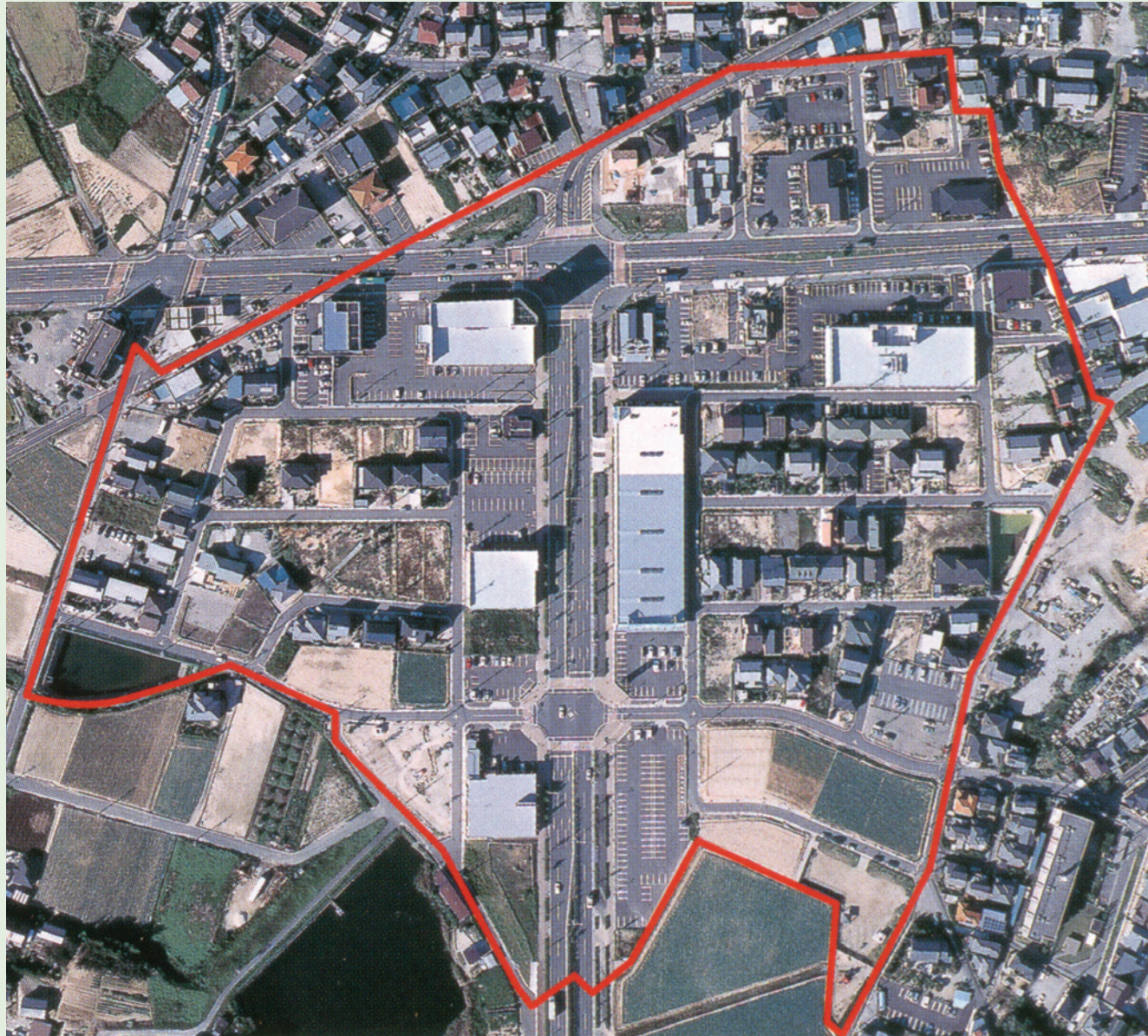
Japan underwent great transformations from its feudal era to its post-war recovery process, followed by rapid economic growth. The accelerated urbanization process generated a concentration of the population in industrial areas and uncontrolled land occupation, where farming communities used to exist without basic infrastructure and support for the population's activities. The streets were not built for automobile traffic but for rural workers to get back and forth. Urban development projects became necessary at first when the migration process from rural zones to urban areas began. The projects were implemented in a second scenario when cities had to be rebuilt due to natural accidents such as earthquakes and typhoons, or the mass destruction caused by the Second World War. Among the diverse urban development project types, LR played an important role as an instrument for decentralization of economic activities in urbanized areas. It promoted the control of the disorderly expansion of human activities, of environmental problems, and consequently, the refitting of urban sectors in order to adapt them to society's current aging process.

Land readjustment (or *kukaku-seiri* in Japanese) is a shared execution urban development method in which all property owners and tenants contribute to project financing and execution, with a balanced distribution of costs and result benefits. The LR projects are authorized by the local and national governments through a specific execution law drawn up according to the parameters set down in the Land Readjustment Law of 1954. The specific law is enacted after an agreement between all the landowners in the project area. Throughout the entire execution process, the properties are redimensioned, repositioned and after contribution of part of the land, areas are set aside to build new public equipment. Besides the public land, reserve lands are also established from each landowner's land contribution. These lots are put up for sale and the proceeds finance the project. The properties are worth more after this is concluded thanks to improvements in accessibility, improvements in environmental quality and the new or optimized infrastructure. The absorption of development benefits occurs on behalf of the public authorities through the establishment of new public areas without using the expropriation instrument and on behalf of private enterprise through the appreciation in land values after execution of the project.

LR has been applied extensively throughout the country and has become known as the Mother of Urban Planning in Japan (or *toshikeikaku-no-haha* in Japanese). Many project modalities were improved over the nearly one century since it was introduced, transforming more than 11 thousand areas, or 390,000 ha in Japan. And its concepts were also translated and adapted in several other countries.

Image of the area in the city of Obu-Hantsuki, state of Aichi, before execution of the LR project. Source: Aichi Urban Planning Division, Government of the State of Aichi, Japan





2. Purpose

LR is basically implemented for two different reasons: provide lots for housing in peripheral areas and develop urban infrastructure in intensely urbanized zones. The first develops land units for housing, other installations for the prevention of disorderly occupation and the establishment of new residential zones. The second develops previously populated areas with infrastructure by renewing their urban functions, refitting or improving already installed infrastructure.

Within these two proposals, we can divide LR projects in Japan into five different categories:

1. Development of new cities: Implemented in suburbs to provide housing lots in areas that neighbor those occupied by industries during the rapid economic growth period. Consists of transforming farming and forest areas by dividing them into lots.
2. Prevention of disorderly growth: Implemented as an integrated development project in peripheral areas where occupation was begun in a random and disorderly manner. Consists of the urbanization of these areas in order to provide improvements for the environment.
3. Urban renewal: Consists of the promotion of commercial uses with appropriate infrastructure in partially built areas. This is the most complex model due to the complicated management of property deeds throughout the negotiation and implementation period and the high costs involved.
4. Development of urban centers: Implemented in areas near large urban centers. These are generally old industrial or railroad areas where the infrastructure is transformed and adapted for new uses.
5. Urban reconstruction: This model is related to the recovery of areas destroyed by natural accidents, especially earthquakes. It was broadly implemented for reconstruction after the Great Kanto and Hanshin Earthquakes and for reconstruction of cities destroyed during the Second World War.

After implementation of the LR projects, the residents receive several benefits, including: improvement in the anthropic environment (transformation of the urbanized environment through improvements); natural disaster security and prevention (earthquakes and their consequences – landslides, fires and floods); appreciation of property worth through the effective/efficient use of land units, which aggregates new land use and occupation; and urban installations.



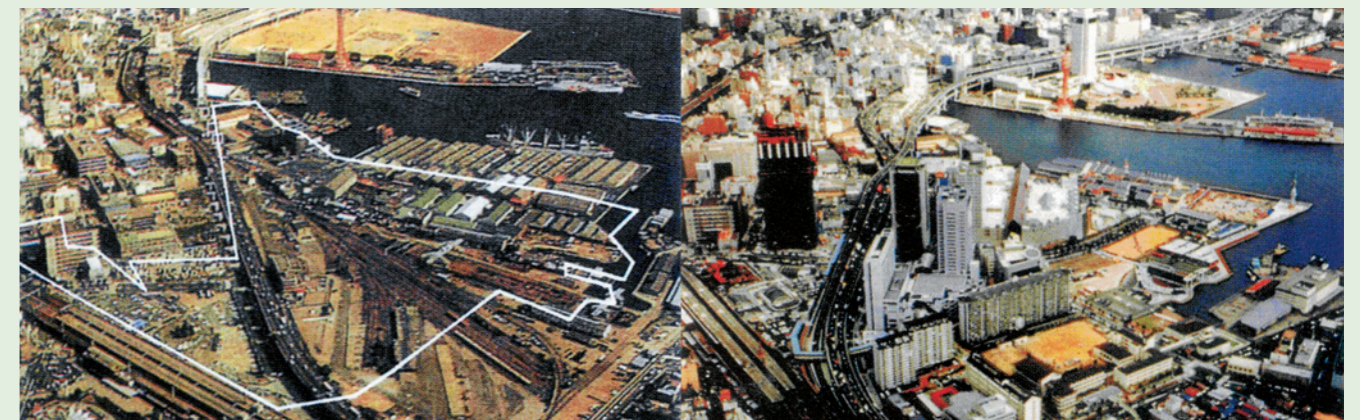
Development of new cities: area of Kayata in the state of Chiba.
 Source: Japan' Ministry of Land, Infrastructure and Transport - MLIT



Prevention of disorderly growth: area of Naka-Maezawa in the state of Toyama.
 Source: Japan' Ministry of Land, Infrastructure and Transport - MLIT



Urban renewal: east area of Sendai Station in the state of Miyagi.
 Source: Japan' Ministry of Land, Infrastructure and Transport - MLIT



Development of urban centers: port area of Kobe in the state of Hyogo.
 Source: Japan' Ministry of Land, Infrastructure and Transport - MLIT

3. Mechanism

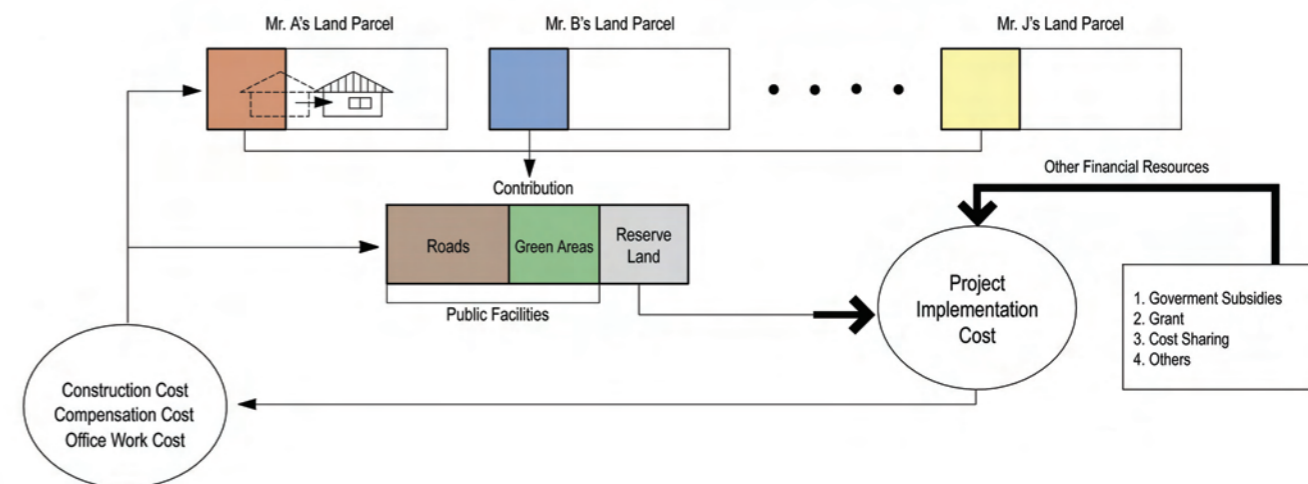
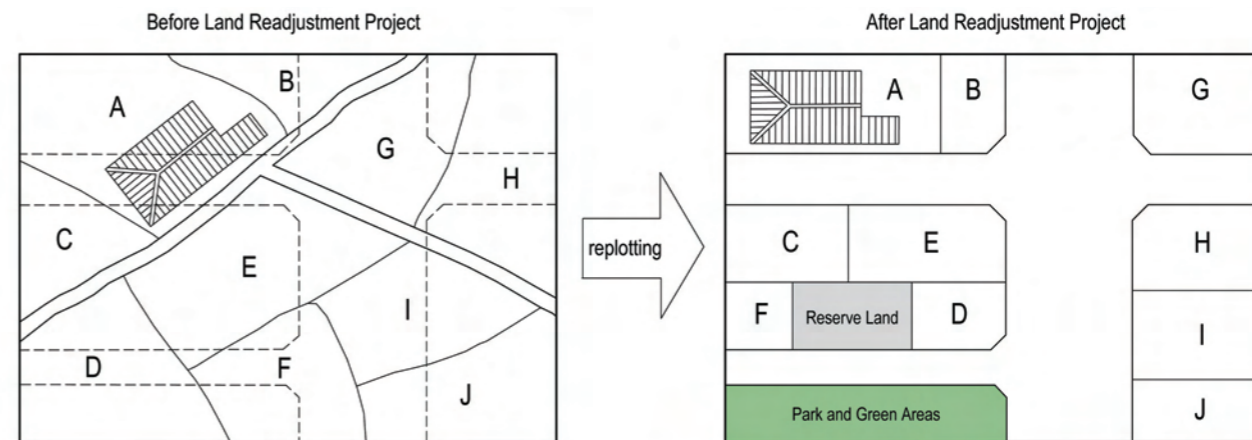
LR's main mechanisms are replotting and right conversion. Throughout the project's entire execution process, the land units in its perimeter and indicated for transformation are redimensioned and repositioned. In some cases, the buildings are reallocated and the old lot's property rights are transferred and converted to the new one. At first, replotting and right conversion are carried out in mutual agreement among all landowners and tenants involved. When any party involved in the process enters into disagreement with the agreed upon decisions, the project promoting agent can impose the sovereignty of established legal procedures, as a final resort.

The landowners contribute with part of their properties during the replotting process. The new lot ends up being smaller, however readapted to the new functions proposed within the project. Part of this contribution is used to carry out public urban infrastructure works and the other part, in certain projects, to establish reserve lands. These reserve lands are sold to finance project and execution costs. The percentage that results from this contribution is called the contribution rate and its value is equivalent to the difference between the total previous area and the total area after replotting (smaller and the result of the contribution to new public areas and reserve lands).

The projects have several execution stages, according to a rigorous planning process. Many landowners need to be temporarily reallocated in order to carry out the diverse works such as land leveling and preparation for building the public installations. This temporary reallocation takes place before the final execution of the new approved replot and this temporary replotting project is also established according to an agreement among residents.

After project execution, the value of replotted lots is greater than before the process due to the effective improvement in use and proximity to new urban installations such as green areas, large access roads and new public transportation. This appreciation is called an "increase in land use value" from before to after lot development.

These new urban installations generally benefit not only the residents, but in many cases they have a regional benefit range. Therefore, local, regional and national government subsidies are provided to cover initial project costs, institutional technical staff costs for promoting the plan and works of a regional and/or metropolitan scope that could not be paid through the sales of reserve lands or other financing mechanisms. The subsidy system created for each LR project often serves to solve diverse problems such as the reimbursement of landowners and tenants for possible depreciation of properties or damage caused by land reallocation.



Urban incentives

No change in legislation, benefit or granting of exceptions, such as additional building potential or pre-established zoning changes in land use and occupation may be used as elements for negotiation. The environmental improvement of infrastructure and appreciation of properties are the greatest urban incentives provided. Besides these, after replotting, diverse incentives are offered: exemption from payment of several fees on lots that originate from replotting (ownership record, income tax and taxes on the maintenance of corporative titles); reduction in financing rates at the federal level; reduction in pre-developed to post-developed lot deed transfer taxes; reduction in building taxes and complementary fees.

4. Institutionalization

Requirements for approving a land readjustment project

The purpose of the LR project is to build a city by changing or replotting the shape and size of the lots so new public infrastructure such as avenues, streets and parks, can contribute not only to an improvement in environmental quality but also in land appreciation. This type of project is based on the following process: part of the land that belongs to those being benefited by the project is offered as a contribution, according to its total area and location. In exchange, the landowners will enjoy the new improvements as well as the appreciation of their lots thanks to the new public infrastructure. A method called replotting is used to reorganize the project's space and whereby the land areas (and in some cases, even existing buildings) are redistributed in order to accommodate new public infrastructure.

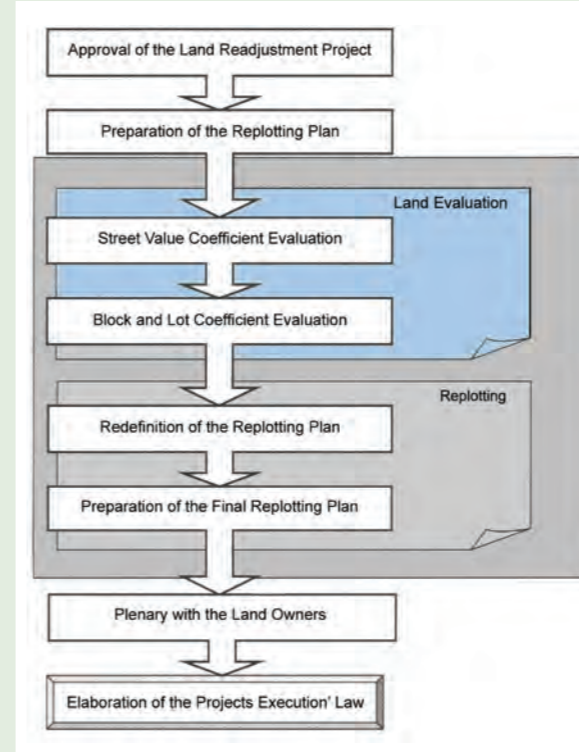
The purpose for replotting is to determine the location, area and shape of each new lot, providing a new "look" to already existing lots. For such, policies have been created for the replotting project. A democratic method was thus established to ensure land appreciation, good usage conditions for the area after the project and fair distribution of lands among the benefiting parties.

This policy presupposes a plan to be followed to elaborate the LR projects, and which will be explained below.

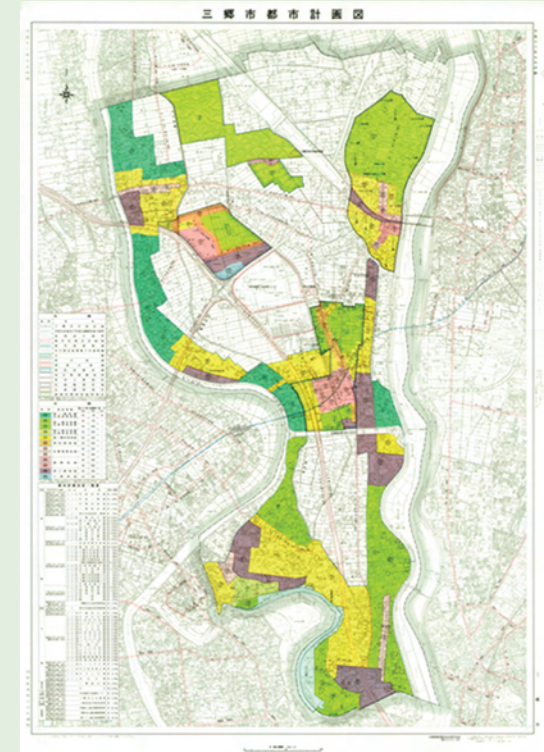
The Land Readjustment law guarantees the rights of the property owners and implementation agencies, including the legally effective administrative rights for those who oppose the project. The law also consists of a plan to prepare the building reallocation and replotting project and the construction of public infrastructure. It also addresses reserve lands and the applications for the land registry system.

This law ensures the private implementation agency full rights for conducting the project if at least two-thirds of the resident population is in agreement with it. This condition is not necessary if the LR project is carried out by an implementation agency that belongs to the local government or public authorities. Although the right to conduct the plan is handed over to the implementation agencies, even before project start-up, plenary sessions are held with all those involved (including those who oppose it) in order to try and obtain a consensus, even if in many cases this may take a few years.

The master plan establishes areas in which the LR projects should be carried out according to a set of guidelines. These areas



Requirements for approving the land readjustment project. Source: Tamano Consultant Co. of Japan.



Master plan indicating the LR application areas in the region between Tokyo and Tsukuba, called Misato Chuo. Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan

are selected according to the importance of their transformation for the local community; it is always important to consider the fact that residents will remain after project execution.

Preparation for the replotting project

In order to prepare a replotting project, it is necessary to know the conditions of the involved area in order to plan guidelines and establish policies by means of: confirmation of land and existing infrastructure use in the area; finding all the landowners and other rights that belong to the lots; detailed study of the area, including the block, lot, public installations and underground infrastructure; determination of standards for the replotting project and land appraisal; determination of the replotting calculation method and establishing rules for land appraisals that are the best and most pertinent for the project's area.

Selection of the replotting method

The replotting calculation method to be selected for a specific project area must take into account the land's geographic and social aspects. There are two replotting calculation methods: the proportional appraisal method, based on land value, and the conventional appraisal method. Nowadays, Japan generally uses the land value method due to the great disparity in values according to different land areas and uses.

Land appraisal: calculation of the street value coefficient

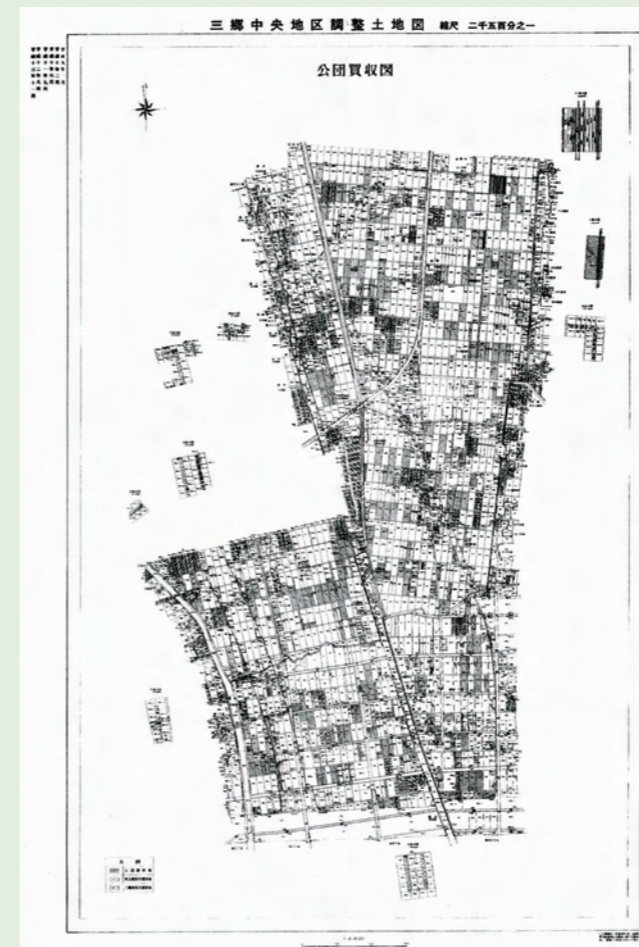
Land appraisal is necessary in order to decide and apply the most democratic method possible in the replotting process. Therefore, it is fundamental to know the economic factors inherent to the project's area (lot prices, property rights and fees). Since many LR projects deal with alterations in uses and functions in the city, this type of appraisal becomes a valuable tool in the appropriation of appreciated lots after the project.

In LR projects, the changes and increases in land values need to be carefully measured by the land appraisal. Therefore, areas with large numbers of landowners require much time and effort to avoid obtaining erroneous data that could jeopardize the progress of future negotiations. The main factors for applying land appraisal include: calculation of reserve land; calculation of compensation for damage suffered; calculation of project area replotting and calculation of considerations and equal onus.

There are three methods for calculating land values in LR projects, where the street value coefficient method is the most broadly used. These methods were introduced by the Ministry of Construction of Japan in 1950 ("Standardization for land value calculations") and they have undergone countless revisions ever since, changing indexes that reflect changes over time and in the Japanese economy. The last version dates back to 1978 and it includes the bases used until today.

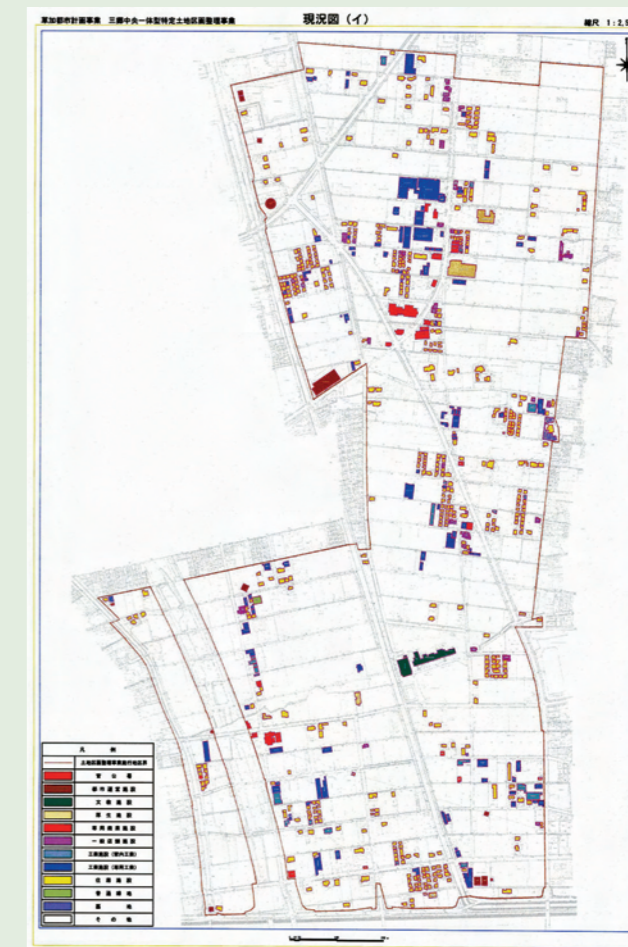
The three appraisal methods are:

1. Land appraisal method based on cumulative data: In this method, government or implementation agency experts verify land conditions and compare them with data and studies accumulated over the years. Therefore, this method requires constant evaluation, year after year, lot after lot, for a long time, which makes its application very complicated nowadays due to the excessive efforts required to update the database.
2. Appraisal method by sectors: In this method, each lot is appraised by the sector to which it belongs. It is used in cases where, prior



Detailed survey of the area including blocks, lots and public installations for Misato Chuo.

Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan



Survey of land use and existing infrastructure in the area of Misato Chuo.

Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan

to the LR project, the land consisted mostly of mountainous areas and farms, with few streets and without public infrastructure that could affect land values.

3. Street value coefficient appraisal method: In this method, the price in area for each lot along the street system (with regular façade and shapes after replotting) is taken into account. That is how the street value coefficient is established. The lots are appraised based on these street value coefficients and changes are made according to where they are located on the street, their shape and conditions. This system has the following positive points: a large number of lots can be appraised in a short period of time; any possible deviations during the appraisal method will be small; the method is scientific and based on clear rules, therefore, it is easier to enter in agreement with the landowners; permits the calculation of land values before and after the LR project (future values), at the same time.

Redefinition of the replotting project

After land appraisal and the layout of each lot with its respective absolute values for comparison, the redefinition of the replotting project begins. This is the phase that will make the adjustments between what was proposed by the master plan and by the LR project, adjusting the plan to all situations and obstacles found during the replotting process. According to the Land Readjustment Law (Article 89): "There must be a symmetry between the lot's initial situation and replotting's redefinition phase with regard to conditions such as location, area, land characteristics, water, sewage and use of the environment." This is called the Law of Correspondence. In the replotting project, the "new" lots are designated to reflect the same previous conditions such as land use conditions and property ownership. For such, it becomes necessary to adopt a coherent and fair method to make this adjustment.

This method is known as the proportional rate calculation method. We saw that in the land appraisal process, the total appraisal index for each part of the lot becomes higher after the LR project. However, a new index is obtained by subtracting the appreciation of the reserve land from the appreciation of the replotted lands. This appreciation should be equally distributed not only among the new parcels, but also the reserve land. The proportional rate is the basis for Replotting's proportional appraisal method.

The replotting project consists of reformulating the old land division and creating a new one that adjusts to the new public infrastructure. This reformulation considers the street value coefficient, plus the proportional appraisal method, to ensure equal land appreciation to all landowners and reserve lands (which will finance the public works) in order to obtain what we call the contribution rate. Each lot will have a different contribution rate according to its location, proximity to project improvements and living conditions before and after the project.

Preparation for the final replotting project

After concluding the replotting project, the plan is reviewed with the participation of all interested agents. This review takes into account the relations between the new and old land locations, the new shapes of the lots and the different contribution rate. After that, the final project is prepared, which will be transformed into law.



Conceptual view of the station proposed for the Misato Chuo land readjustment project. Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan

Plenary sessions with the owners

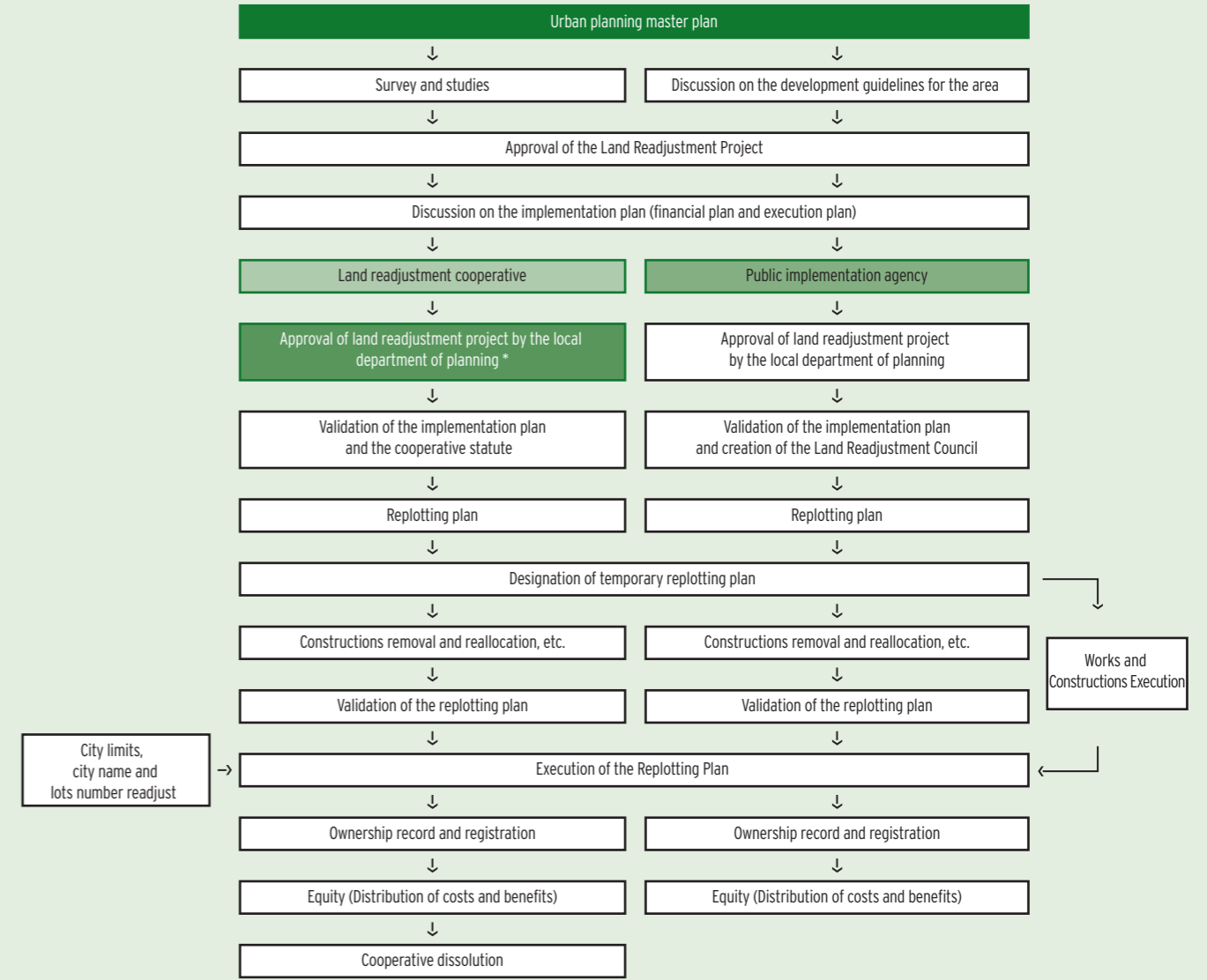
Throughout the entire process, meetings and plenary sessions are held to provide explanations to the residents. Since the LR project directly affects the rights of residents and landowners, the agency's technical implementation staff must gain the trust of those involved. It must be comprised of a highly specialized team for the project to be executed without errors or misunderstandings (which could entail in failure and the plan not being carried out). Although the special knowledge of implementation agency consultants concerning the method is of fundamental importance, the technical team must establish a relationship of respect and trust with the landowners, especially during meetings and consulting and plenary sessions.

During the project's final phase, these plenary sessions are held to provide the final adjustments and get the landowners' signatures. They will thus sign their agreement with the project members who will compose the law that will guarantee project execution.

Elaboration of the law that will ensure project execution

During the formulation of the law by local government, every type of information is sent and made available especially for those affected by the project and who reside in the immediate surroundings, which ensures transparency in the process. This helps guide the population informing them of their obligations before, during and after plan execution. After the law has been formulated and approved by the government, execution begins immediately and it is up to the project implementation agency to carry it out.

A summary of the basic procedures for implementing LR projects in Japan is shown below.



* In the case of the utilization of national subsidies

5. Management of the implementation process

Management of the execution process is carried out exclusively by the implementation agencies or project promoter agents. In Japan, these entities are public or private (property owner and tenant cooperatives) sector administrative organizations. The private initiative promoter agents are regulated by public authorities and have compulsory executor powers in LR projects.

The modalities and characteristics of each implementation agency are described below:

- Individual promoter agent (one or more participants): Legally, the number of landowners and tenants involved is unlimited. However, in this case, the number of participants to reach the bases for a consensus cannot exceed four or a little more than five.
- LR associations and cooperatives (more than seven participants): LR projects carried out through cooperatives are mainly executed in farming areas in order to provide urbanized lots with public equipment. Private initiative associations establish partnerships with cooperatives to implement the project. It is necessary to have the agreement and consent of at least two-thirds of the area's residents for the plan to begin.
- Local – municipal government (state or municipal government): LR projects implemented by the government are the ones that need to avoid disorderly occupation of the land, providing the required infrastructure for their development. In Japan, this type of initiative produces the best results.
- Administrative organizations – public enterprises (state government, municipal government or the Ministry of Land, Infrastructure and Transportation – MLIT): In those cases where the project is related to national interests or it is directly designated by the national development policy, special administrative organizations are created. The best known projects conducted by this type of agent are for reconstruction after disasters.
- National public corporations (Urban Development Corporation – UDC or the Japan Regional Development Corporation – JRDC): In cases where urban development is related to national interests, public corporations are designated to conduct projects that provide housing zones in metropolitan regions or implement induction projects for the economic revitalization of state interest zones.
- Local public corporations (Local Housing Corporation): Few cases have used this type of agent, and its designation mainly includes providing lots for developing new cities.

Compendium of Land Readjustment Projects in Japan

Implementation Agencies	Finished Projects		Converted Areas		Under Construction	
	Projects Amount	Hectares	Projects Amount	Hectares	Projects Amount	Hectares
Before the 1954's Land Reajustment Act	1,183	49,101	1,183	49,101	-	-
After the 1954's Land Reajustment Act						
Individual	1,323	21,838	1,268	20,001	55	1,837
Association and Cooperatives	5,825	123,564	5,016	101,289	809	22,275
Local Government	2,809	135,516	2,044	103,570	765	31,946
Ministry and Administrative Entities	321	33,652	321	33,652	0	0
National Public Corporation	22	1,962	13	851	9	1,111
Local Public Corporation	208	26,338	149	18,826	59	7,513
Public Enterprises	18	778	12	407	6	371
SUBTOTAL	10,526	343,648	8,823	278,596	1,703	65,053
TOTAL	11,709	392,749	10,006	327,697	1,703	65,053

Source: Ministry of Land, Infrastructure and Transport - MLIT from Japan. Updated in March 2004.

Implementation plan

The project implementation plan (plan to build public equipment and the plan to provide buildable lots) is carried out according to the designation of the master plan for developing certain regions in the city. The implementation plan is comprised of four items:

1. Location and perimeter of the project area (scale 1:2.500);
2. Land readjustment project (scale 1:2.000);
3. Project terms and details;
4. Budgetary plan.

We will use the Misato Chuo project spreadsheets, which has 114.8 ha, as an example. It was implemented by a national public corporation. The development of the public infrastructure for this project is shown below. The proportion of public areas grew from 14.0% (M) to 32.5% (N) after plan execution. The contribution rate for creating the reserve lands (R) reached 160,137 m² or 13.9%.

Land-use classification before and after the land readjustment project (Misato Chuo Land Readjustment Project – Newtown Development Type)

CATEGORY	BEFORE THE PROJECT		AFTER THE PROJECT	
	Area (m ²)	(%)	Area (m ²)	(%)
PUBLIC LAND				
Roads	82,285	7.2%	267,461	23.3%
Parks & open spaces	12,329	1.1%	40,812	3.6%
Rivers	65,752	5.7%	65,294	5.7%
Sub-total	160,367 (M)	14.0%	373,567 (N)	32.5%
PRIVATE LANDS				
Lots	987,667 (A)	86.0%	614,329 (E)	53.5%
Reserve Land	-	0.0%	160,137 (R)	13.9%
Sub-total	987,667	86.0%	774,466	67.5%
TOTAL (M + A) / (N + E + R)	1,148,033	100.0%	1,148,033	100.0%

Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan

In LR projects, landowners and tenants contribute in a balanced manner with the equivalent of their property for developing public equipment and financing the costs. The contribution rate is the ratio between the land for constituting the public areas (P=N-M) plus the contribution to create the reserve land (R), divided by the total area before project implementation (A) multiplied by 100. The calculation of the Misato Chuo project contribution rate, which obtained a value of around 38%, is shown below.

Land contribution ratio calculation (Misato Chuo land readjustment project – Newtown development type)

Private land before the project A	Private land after the project D - R, with D = A - P	Contribution			Contribution Ratio		
		Public land P = N - M	Reserve land R	Total P + R	Public land p = P / A	Reserve Land r = R / A	Total (P + R) / A
987,677 m ²	614,329 m ²	213,201 m ²	160,137 m ²	373,338 m ²	21.6%	16.2%	37.8%

Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan

The benefits acquired through plan development are not only absorbed by the incident properties in the project area, but also by the reserve land constituted by means of the contribution. The total area planned for the reserve lands and their monetary appreciation after project execution are shown in the implementation plan. If we divide the m² value before (V) and after the project (V'), we have the increase in m² value (ΔV) after the enterprise is concluded. If we divide this appreciation (ΔV) by the m² price after the project (e), we get the area for the reserve land proportional to the appreciation (R max) created by project execution. In conclusion, we divide the real contribution area (R) by this value that is proportional to appreciation (R max) and we get the appraisal for the reserve land (R / R max). This reserve land appraisal percentage corresponds to the distribution of costs and benefits for the project. If the appraisal of the reserve land has a value of R / R max = 1, that means the landowners and tenants financed all of the project's benefits. If the appraisal of the reserve land has a value of R / R max = 0, that means the landowners and tenants received all of the project's benefits. In Japan, an attempt is always made to balance the distribution between costs and benefits; therefore, R / R max = 0.5 means the development was made in a manner that is fair and appropriate to public authority intentions. The R / R max value for the Misato Chuo LR project is around 60%.

Evaluation of reserve land
(Misato Chuo land readjustment project – Newtown development type)

Total value before the Project	Total value after the Project	Increase of Total Value	Unit price m ² after the Project	Reserve Land		Evaluation Ratio
				Maximum acreage of reserve land	Acreage of reserve land	
$V = A \times a (\text{¥})$	$V' = E \times e (\text{¥})$	$\Delta V = V' - V (\text{¥})$	$e (\text{¥} / \text{m}^2)$	$R \text{ max} = \Delta V / e (\text{m}^2)$	$R (\text{m}^2)$	$R / R \text{ max}$
149,139,227,000 ienes	228,467,470,000 ienes	79,328,243,000 ienes	295,000 ienes/m ²	268,914 m ²	160,137 m ²	59.5%

Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan

The promoter agent receives the proceeds after reserve land commercialization to pay for all project costs. However, according to the infrastructure installed and its local, regional and even national scope, the government offers subsidies for the implementation of urban installations. The proposed budget plan is shown below with the expenses and revenues for project execution. By expenses, we mean all pertinent costs: civil construction costs, reallocation costs, research and project study costs, direct and indirect costs according to the circumstances for each project. By revenue, we mean all funding sources for development: government subsidies, local subsidies, funds from reserve land sales and other private initiative investments. In the Misato Chuo project, 33% of the costs are from civil construction and 30% are from reallocation. On the other hand, 67% of all expenses are paid by funds that stem from the reserve land. Since there were many domiciles before project execution, the reallocation cost was higher than in most studied cases.

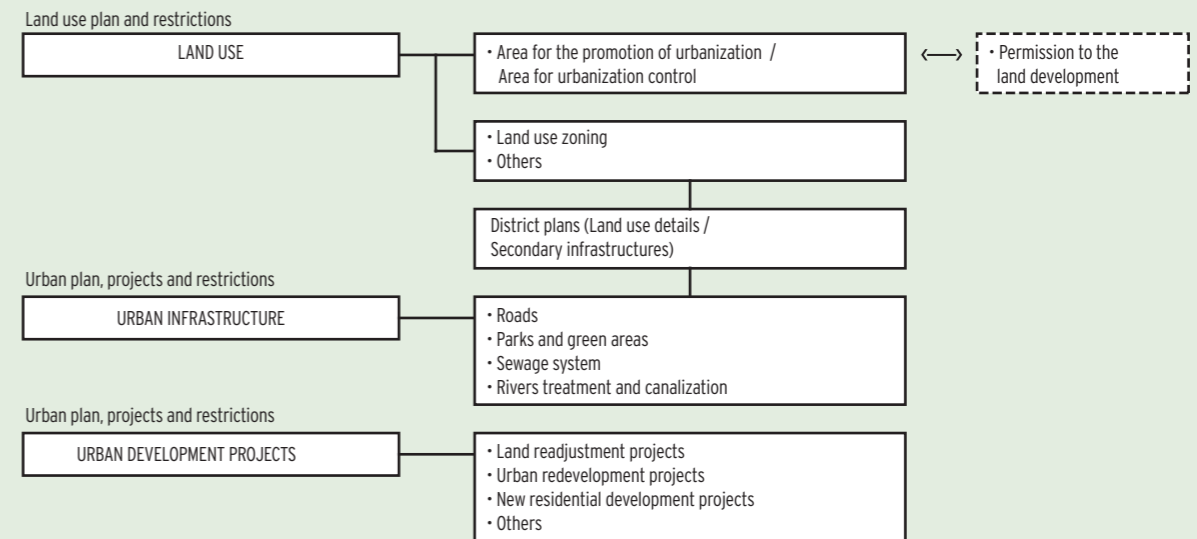
Revenue & expenditure (Million yen)
(Misato Chuo Land Readjustment Project - Newtown development type)

EXPENDITURE (million ¥)		REVENUE (million ¥)	
Construction Costs (C1)	23,477	Subsidy (S)	19,628
Relocation Costs (C2)	21,218	Cost Sharing with facility administrator (Ss)	3,520
Survey & Design Costs (C3)	6,798	Disposal money of reserve land (R x e)	47,240
Miscellaneous Costs (C4)	2,638	Others (So)	—
Overheads Costs (C5)	5,413		
Interest (C6)	10,844		
TOTAL (T)	70,388	TOTAL (T)	70,388

Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan

6. Insertion in the urban planning system

In Japan, the urban planning system is divided into three main components: land use, urban infrastructure and the urban development project. Urban development projects would be the promoter agent for land use plans and urban infrastructure plans and they include several project modalities that are broad in scope and purpose. Land readjustment projects, urban “redevelopment” projects, development projects for new residential areas, development projects for industrial parks and district residential development projects are among these modalities. Another modality for the exclusive regulation of private land use, as well as zoning, is regulated by Land Development Permission.



Urban Planning Structure in Japan Source: Japan' Ministry of Land, Infrastructure and Transport - MLIT

The legal basis for urban planning in Japan is found in the Urban Planning Law of 1968. Before this law, during the 1960s – a period of great economic growth – there was a large concentration of population in urban areas, especially metropolitan regions. The “spontaneous” development within urban limits led to the invasion of farm and forest areas. Urban areas expanded in a disorderly manner and the following phenomena began to have great relevance: establishment of areas with very bad urbanization quality without the minimum required infrastructure such as access roads and sewage systems; environmental degradation and pollution: incompatibility between industries and domiciles; unstable urban functions due to traffic jams resulting from the failure in developing arterial roads, which permitted the increased use of automobiles. The enactment of the law of 1968 was founded on the following objectives: enactment of land use plans with legal power; production of edified lots in new urban areas; regulation and monitoring of land use through the Land Development Permission System; explanation of the responsibility in sharing infrastructure costs by the government and private initiatives and the promotion of infrastructure improvement and development; attribution of legislative power to municipalities (local governments) and the introduction of a democratic planning process.

Content of the Urban Planning Law of 1968

Urban planning area

The urban planning area is the area within the scope of the law. The areas are not only defined by an administrative unit, but should also include several units, where there is the sharing of benefits and common objectives for developing transportation systems and infrastructure. When designating the urban planning territory, it is necessary to make adjustments with other plans for land use on another (and higher) category of planning, stipulated by the National Law for Land Use Planning.

Improvement, development and conservation policies

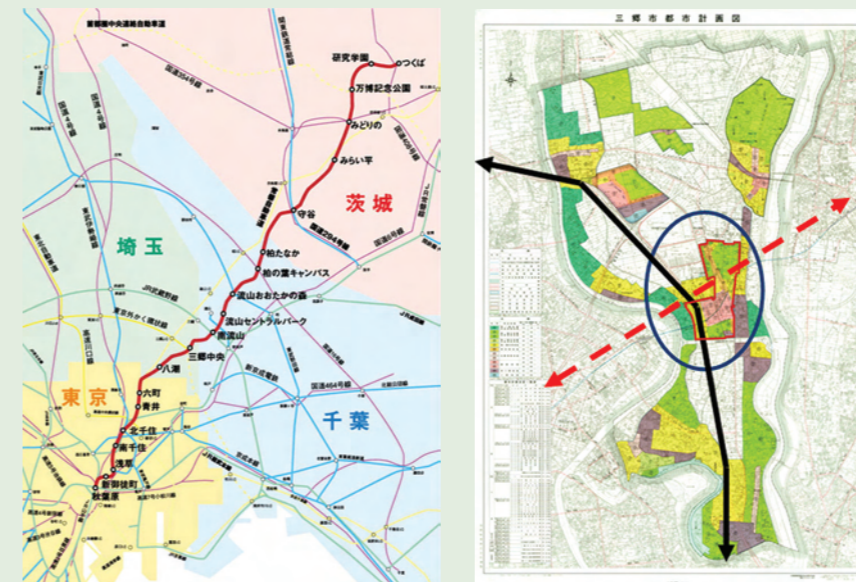
These are related to the designation of the area for promoting urbanization and the area for urbanization control, as we will see further ahead.

Area for the promotion of urbanization and the area for urbanization control

The planning area (or territory) is divided into the area for the promotion of urbanization and the area for urbanization control, with the following characteristics: the development of constructed lots is not permitted at first in the urbanization control area; the urban planning fee charged on the real estate market only falls on the area for the promotion of urbanization; priority is given to the implementation of infrastructure in the area for the promotion of urbanization; the urban development projects are only applied in the areas for the promotion of urbanization.

Zoning - Land Use

Zoning is related to the control of building parameters for each use and provides the basis for land use regulation and the forms of construction. There are 12 types of land use zones contained in the areas for the promotion of urbanization. The location of schools, libraries, hospitals, nurseries and markets is not regulated by zoning, but defined by urban planning for the implementation of infrastructure and urban equipment.



Planning of TX railroad line connecting the downtown Tokyo to the city of Tsukuba. Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan

Incidence of main infrastructure on the Misato Chuo master plan (in red, the TX railroad line; in black, the highway loop in the Tokyo metropolitan region). Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan

Land use regulation in Japan is not as rigorous as in other countries. For example, other activities compatible with residential use, such as commerce and neighborhood services (on a local scope) are only permitted in residential districts.

The construction of individual buildings is verified with regard to compliance with designated zoning, as required by the Building Standards Law (Building Code).

Land Development Permission System

The objective of the Land Development Permission System is to encourage the formation of urban planning areas and requires every promotion of constructed lots be approved by the local government. At first, real estate developments are not approved in the area for urbanization control. The infrastructure that must be developed by the developer, such as sewage, parks and streets are forwarded to the local government, which will be the administrator of this urban equipment.

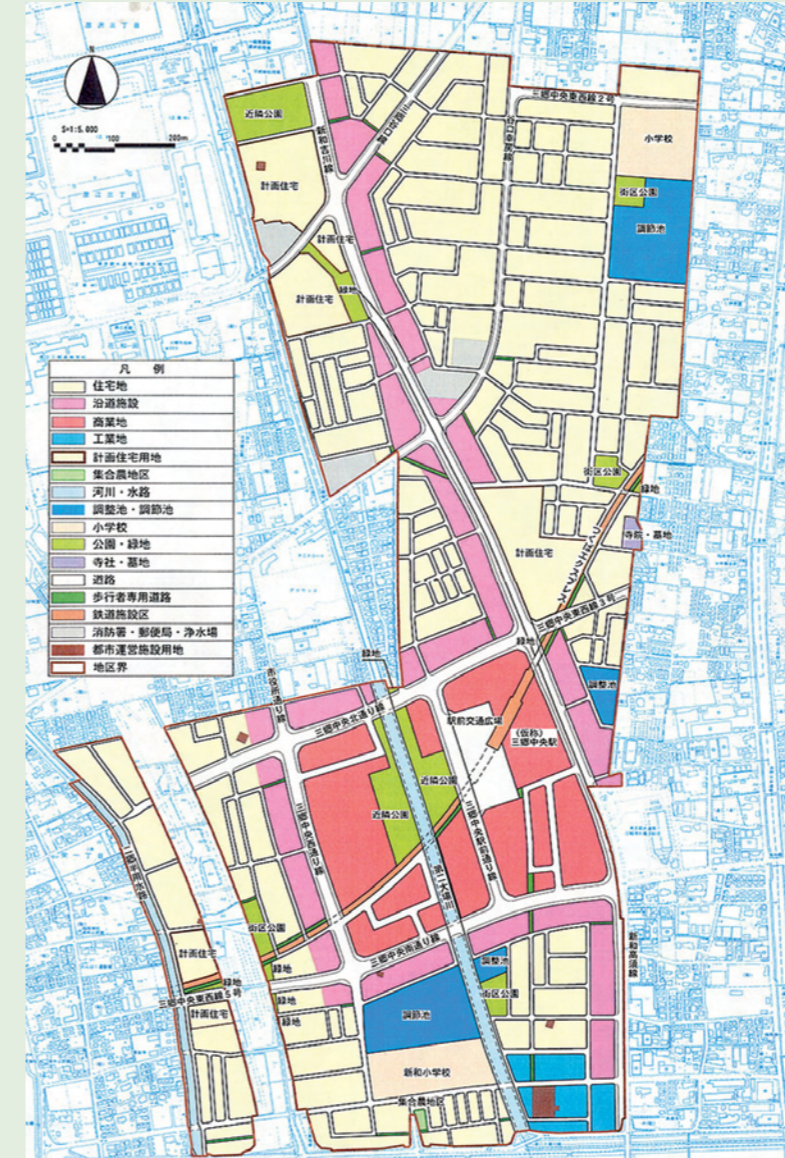
The Urban Planning Law does not deal with cost sharing for implementing infrastructure. However, the developers are obliged to negotiate the urban equipment to be built with the infrastructure administrator before permission is granted. They generally tolerate the transfer of infrastructure without the requirement of compensation, even if not stipulated by law. In many cases, the local government requires developers to bear school construction costs, etc. This is the reason for the cost increase for supplying (production) lots for construction.

Urban planning for infrastructure

To facilitate the future development of infrastructure, the areas for implementation of related public investments are approved in urban planning. All necessary restrictions for exercising rights are imposed.

Streets, parks and sewage are the infrastructures requiring urban planning approval. These are submitted to the jurisdiction of the Ministry of Land, Infrastructure and Transportation – MLIT, and other infrastructures (hospitals, urban railroads, schools, etc.) are submitted to the jurisdiction of other Ministries.

Land readjustment project in Misato Chuo. Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan





Panoramic view of the Misato Chuo region in 2005. Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan

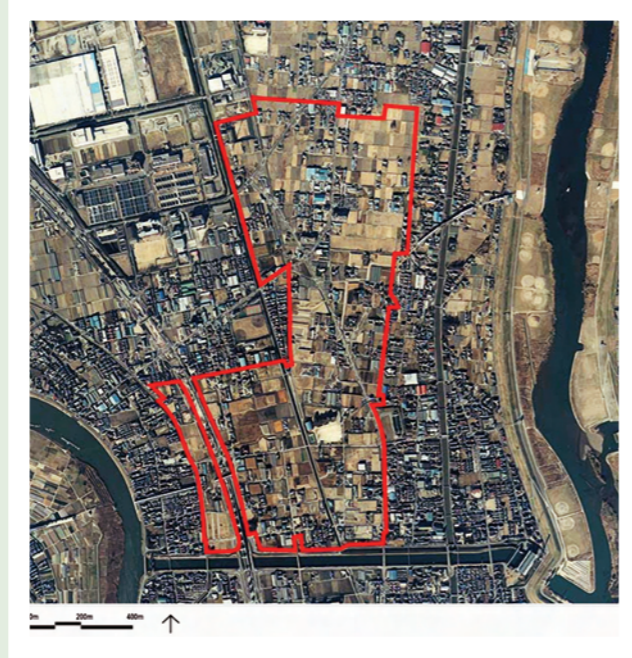


Image of the Misato Chuo region during execution of the land readjustment project and the TX railroad line. Source: Shin-ichi Aoki, Urban Renaissance Agency, Japan

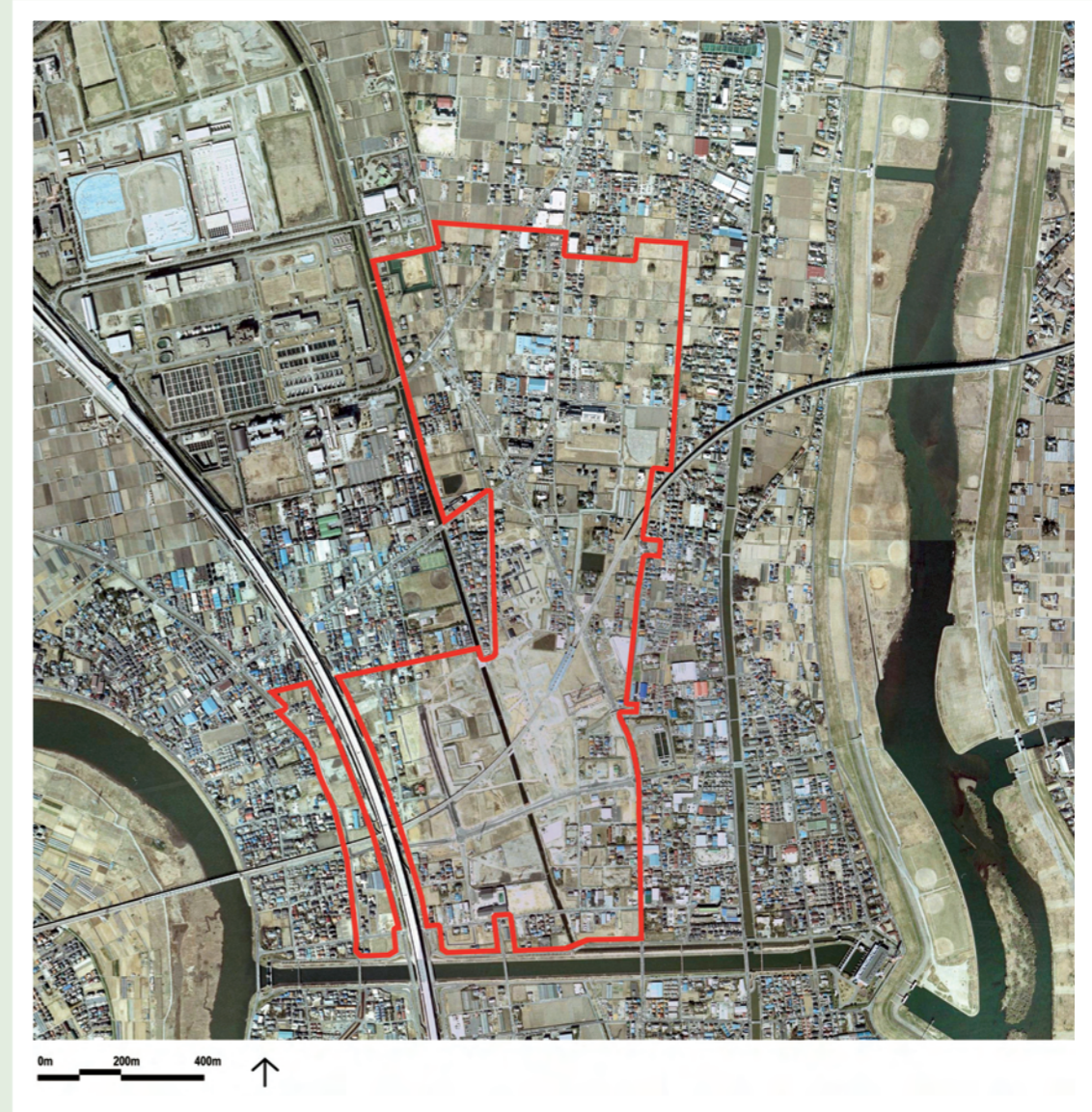


Image of the Misato Chuo region during execution of the land readjustment project and the TX railroad line. Source: Google Earth 2007.

Urban development projects

The appropriate urban development areas are not promoted by trust in the landowners of the development initiative. For this reason, authorization is given by public authorities to those who wish to implement the urban development area, disregarding the intentions of landowners and tenants. It is necessary to provide an institutional structure through an urban development projects system.

To facilitate implementation of future projects in areas for urban development projects approved by the planning process, the construction of buildings is restricted, except for easily removable ones, such as those made of wood structures. The promoting agent is authorized to restrict the purchase and sale of land, the expropriation of land and the redimensioning and repositioning of lots (compulsory transfer from one lot to another) until project approval.

Urban development projects are comprised of land readjustment projects, urban "redevelopment" projects and new residential development areas. The implementation of specific projects is regulated by their own laws.

7. History

The origin of LR in Japan dates back to mid-1870, when the method began to be outlined in order to consolidate and optimize farming units, like had been done in Germany. Its application extended to regions affected by great natural disasters, in order to rebuild and adapt earthquake-resistant urban zones. In 1919, the Urban Planning Law was enacted. It legally introduced and established the theoretical foundation for applying the method, which gained great visibility, and was used intensively in areas destroyed by the Second World War. In 1954, the Land Readjustment Law was enacted. Starting in the 1950s, urban and environmental problems of all sorts began to emerge in the main Japanese cities as a result of the great economic growth and rapid urbanization process. In 1968, the Urban Planning Law underwent drastic revision and it began to designate the LR method as the obligatory instrument for all urban development plans.

The history of LR is directly related to contemporary urban planning in Japan and it is divided into four main phases, three of them marked by great disasters:

Phase 1 Great Kanto: Period from before the Second World War, for the development of farming units and improved during the rebuilding of Tokyo after the Great Kanto Earthquake of 1923. Approximately 44% of Tokyo's area was destroyed by the fire. There were 40 thousand fatal victims and nearly 80% of all residential zones were affected. The LR method developed 22,000 ha through reconstruction projects.

Phase 2 Second World War: Period after the Second World War, with the development of cities destroyed by American attacks and by the atomic bomb dropped on Hiroshima and Nagasaki. Three million Japanese died during the period and almost ten million saw their homes go up in flames. The post-war reconstruction policy made intensive use of the LR method. Cities like Nagoya applied the method in approximately 77% of its inhabitable territory.

Phase 3 Great Hanshin: Period covered by the urbanization process that resulted from Japan's rapid economic growth until the Awaji earthquake of 1995. The method was broadly used to prevent disorderly urban growth and readjust the areas that kept the

same characteristics of feudal Japan (houses built of wood and narrow streets). The Awaji earthquake destroyed Kobe and several neighboring cities for a total of 5.5 thousand deaths, 37 thousand injured and 55 thousand buildings demolished. Several LR projects were applied and Special Measures Law 111 – Prevention of Disasters by Earthquakes was enacted as the main mitigating measure for this type of accident.

Phase 4 Great Tokai: This covers the current phase, with projects involving great structural complexity and preventive measures against a possible earthquake in the Tokai region (States of Aichi, Mie, Gifu and Shizuoka). This phase does not have the pressure of the rapid urbanization process present in the previous phase, and it is marked by the adjustment of new and modern developments in metropolitan regions with a heavy concentration of infrastructure and greater utilization coefficients.

8. General balance

The main merits of LR, in comparison with other methods that use expropriation and land acquisition instruments for implementing public works, are:

1. Broad urban development and extensive use: LR is an urban development measurement that besides permitting the building of new infrastructure, such as roads, parks and facilities, also redistributes constructed lots in the project area. The method is completely flexible when concerning objectives, dimensions and level of development.

2. Fair distribution of costs and benefits: Every landowner and tenant must contribute with a portion of their lots or a financial compensation, in a fair manner, for the development of urban infrastructures. On the other hand, the benefits that result from the development process will also be fairly distributed among them. LR projects in Japan always try to be self-financed, although in several cases there has been heavy subsidy.

3. Preservation of the right to property: In LR, pre-development lot ownership is transferred to post-development replotted lots. Therefore, ownership is preserved throughout the process and the resident community remains at the location which is the object of intervention.

4. Participation of landowners and tenants: Landowners and tenants can and should participate in the project. LR projects have a democratic preparation method, and their residents are instructed to ponder and contribute to decisions.

5. Impartial procedures: Project procedures are all regulated, ensuring transparency throughout the process. In the case of implementation by the local government, a representative council should be organized comprised of landowners and tenants. If implemented by a cooperative, periodic meetings should be held between landowners and tenants.

According to data from Japan's Ministry of Land, Infrastructure and Transportation, it is estimated that LR's economic effects are five times greater than the total costs of its project and execution, and 26 times more than the subsidies provided by the national government. According to the graphic that establishes the relations before and after project execution, taking into account the central government's initial subsidy, the capital generated by the reserve lands and the private investments introduced by the improvements, we have: the total cost of the project is returned twofold after the commercialization of the reserve lands and it triples the initial financing capital, for a total that is five times greater than the initial investment (1); the construction of new developments

and their activities generate a return through the charging of taxes and fees that is eight times greater than the initial subsidy applied (2); the final effects of urban development, thanks to the creation of new job opportunities and the improvement in the local and regional economy, will produce 26 times the initial amount invested by the central government (3). As we could see in this chapter, LR in Japan has a highly refined technique in carrying out projects and strong economic emphasis in the development model. This is because the country initially used this instrument to recover from destruction caused by natural disaster and war, which led to the method, accompanied by the "cause" at play, being well-incorporated by the institutions and society itself. During a later phase, and even today, LR was improved with the country's strong economic development, which led to the *land transformation/infrastructure provision/self-financing* model being intensely explored. As we will see in chapter 2, the application of LR in other countries demonstrates the possibility to explore LR concepts in an isolated manner (replotting, infrastructure improvement and self-financing). It is also necessary to consider the strong integrated planning tradition in Japan, which in a general sense, makes the urban planning system efficient in its conception/participation processes and effective in its results.

Economic effects of the land readjustment project (in US\$ million).
 Source: Japan' Ministry of Land, Infrastructure and Transport - MLIT

