

Equalisation Techniques in Urban Management: Analysis of the international practice of Land Readjustment

Marco António Couto Rodrigues

Msc in Civil Engineering

Instituto Superior Técnico, University of Lisbon, Portugal

e-mail: marco.couto.rodrigues@tecnico.ulisboa.pt

Abstract

The management of urban development faces an unavoidable conflict between public and private interests. In order to control development, public administration uses a set of instruments interfere into private property. These instruments are intrinsically discriminatory over properties and have unequal effects over property rights on land, which can have a negative or positive impact on the real estate's market value.

This work explores the equalisation techniques that eliminate or at least mitigate the inequality caused by urban management tools to property owners, focusing on the international comparison of Land Readjustment (LR) practices.

LR is an old spatial planning technique with a growing attention in the last decades. Some countries have adopted distinctive LR approaches that match the national planning systems and property rights regime, and adjusted the LR implementation model towards different goals.

In the Portuguese context, LR was introduced for the promotion of equity and efficiency in urban development. However, since the publication of the respective law, in 1999, its application is far from the expected outcome. Thus, we present a comparison of the characteristics of LR practices applied in specific countries and examine what practices could improve the application of LR in Portugal, based on the obstacles and problems prior identified in the research project "PERCOM – Equity and efficiency in the urbanisation process: a LR execution model", launched in early 2012.

We focus the analysis on three case-studies, corresponding to two experienced and consolidated LR models, namely the German Umlegung and the Japanese Kukaku-Seiri; and the Spanish Reparcelación, due to the similarities of the LR legal framework between Portugal and Spain.

Keywords: Urban Management, Equalisation techniques, Land Readjustment, Equity

Introduction

The public control over the urban occupation and the respective urban development processes faces property rights protection. In other way, public authorities have the responsibility to apply legal and operational tools for the promotion of a sustainable and efficient use of land, thus serving the collective interests. One of the ways to overcome the possible conflict between private and public interests are the processes of shared development, which are funded in compromised relations between public and private entities. The complexity of this negotiation increases in projects where multiple private entities are battling themselves for their own interests. In these situations, voluntary collaboration of different agents is very

difficult to achieve, involving complex and lengthy negotiation processes and thus efficiency losses that compromise projects liability (Viitanen, 2002; Hong, 2007).

In Portugal, the principles for the application of LR were introduced in the 1999 Legal Framework for Town and Country Planning Instruments – RJIGT (Decree-Law n. 380/99 of 22th September). This law established the equalisation rules regarding the properties redistribution in urban development process. However, there were noticed difficulties in the implementation of the law, due to pitfalls from the Portuguese schema (Condessa et al., 2012). Thus, the main purpose of this work is to explore LR practices applied in other countries that could improve the current Portuguese practice, in order to be an effective tool to engage property owners into a shared urban project or plan and to provide a more equitable distribution of profits and charges between them, given the obstacles and problems identified with prior research.

To achieve this goal, the methodology followed included: i) a theoretical review over the equalisation techniques used in the management of urban development; ii) a brief characterization of Portuguese LR schema and the respective equalisation mechanisms, regarding not only the legal framework, but also the perspectives from municipal technical bodies in the field of urban management; iii) an analysis through the international practice of LR, focused on the comparison of three case studies, namely Germany, Spain and Japan. The characterization of the Portuguese practice benefited from the results of the research project PERCOM, initiated in 2012, expressed by the previous works in Condessa et al. (2012), Condessa et al. (2013) and Prudêncio (2014). In the comparative analysis between the studied cases, the respective application of LR is compared in matter of: i) Objectives pursued by the method; ii) Legal framework; iii) Practices of the articulation between rights holders; and iv) Equalisation mechanisms and compensations framework.

2. LR as an equalisation tool

When multiple landowners must join for a shared development project that involves a transformation of properties layout, one of the most interesting techniques is the so-called *Land Readjustment* (LR) (Larsson, 1997; Hong, 2007). This technique has several advantages that go beyond the land assembly problem, being an effective method for value-capture, self-financed development, equitable and fair treatment between landowners and for the supply of urban facilities, providing advantages both for landowners and public authorities (Larsson, 1997; Sorensen, 2000; Viitanen, 2002; Alterman, 2007). LR definition varies across the literature but it can be simply described as an urban development or redevelopment method that involves the transformation of property structure and the distribution of the development costs and final properties between the original titleholders, according to their initial share. The equalisation between property owners provided with the application of LR is made by the allotment of new urban plots in proportion to the initial parcel characteristics and or accessed value (Figure 1).

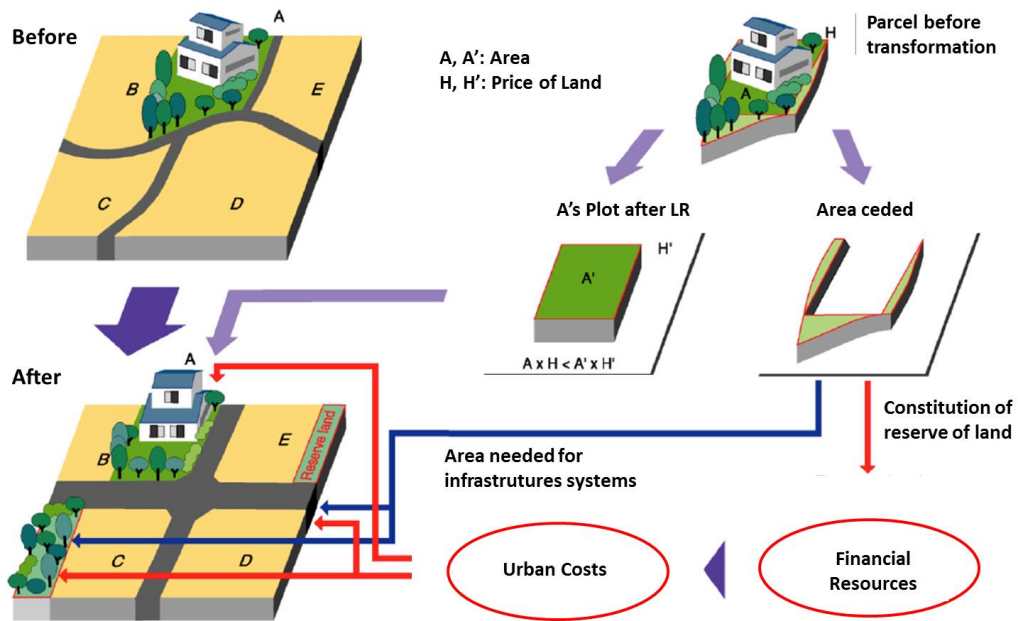


Figure 1 LR schema. Adapted from: International Cooperation Agency of Japan, in Schrock (2012)

3. LR application in the implementation of detailed plans in Portugal

In 1999, RJIGT introduced in the Portuguese legal framework a method to ensure an equitable distribution of benefits and charges from urban development operations, named *perequação compensatória*. According to the law, the application of this method is mandatory in the implementation of detailed plans and in the development of selected areas (*unidades de execução*) that could follow integrated execution systems (*sistemas de execução*), according to the responsibilities of the different agents in presence. Under the statutory law, the urban development areas should be developed as a single implementation project, where the landowners could face property reorganization and redistribution of costs.

The three execution systems regulated by law - *imposition*, *compensation* and *cooperation* - allow a more or less intensity of public intervention. Under imposition system, public authorities have a direct intervention on urban development, drawing the urban solution and developing the land or contracting the development to a private company. Municipal authorities must acquire all properties, assemble them, and sell the final plots to cover the development costs. Under cooperation system, the municipality is responsible for programming the development and elaborate the urban project; and the landowners should follow the execution program, sharing between themselves and with the municipality the outcomes of the operation, according to *perequação* rules established by the law and materialised in the project or in the detailed plan normative. Under compensation system, the role of the public authority is reduced to the administrative control of the operations, such as the project approval and respective building permits. Compensation demands a voluntarily association of the landowners, who should elaborate and implement the project, and cover all the costs.

The practice in Portugal has shown that, more than ten years on since the legal framework that introduced LR, the application of this method is incipient, since only a small part the Detailed Plans published in Portugal, mention any LR content in its legal documents.

In the survey carried out to municipal specialists in urban planning and management, they were asked about the main obstacles to implementation of LR. The major obstacles considered were associated to: (i) insufficiency of municipal technical resources; (ii) ineffectiveness of the legal instruments; (iii) lack of sufficient know-how to elaborate and implement LR content; and (iii) cultural aspects related to interoperability between property owners themselves and property owners and their relation to public administration.

The assessment carried out showed new challenges for the future improvement of Portuguese practice: i) enhance the cooperation between landowners through changes in the legal framework; ii) increase the applicability of LR technique through incentive policies; iii) alleviate the financial dependence from municipal authorities in urban development processes.

4. LR International practice

4.1 Case study analysis

Germany

Germany is known to be the pioneer country to legislate about LR processes, being one of the countries with longer tradition in the development and application of such method (Larsson, 1997; Müller-Jökel, 2001; Davy, 2007). In this country LR is used exclusively for plan implementation, as the urban development is, without few exceptions, preceded by detailed plans. As expressed by the law, whenever the shape of the initial properties doesn't match with the ones of the plots proposed by the detailed plan, the plan should follow a LR process.

The formal process is initiated when the municipal authority selects an area for the application of LR. Then, all properties are mapped and evaluated, and their owners are identified and listened to in an intensive participation process. When this stage finishes, local authorities prepare a replotting scheme where the new plots and land for public use are overlapped with the old land parcels. In order to achieve it, all the original properties are merged together in a *LR mass*, which is subtracted by the land designated for public use according to the detailed plan, obtaining the *redistribution mass*, that is, the land to be redistributed between the owners of original parcels. After the plot subdivision of the *redistribution mass*, each landowner should be allocated to one or more plots. According to the LR regulation, the landowners consent is not needed and the process is mandatory for every landowner in the selected area. The law also guarantees for each landowner that the value of his final plots is at least equal to the value of his initial land parcels. However, the regulation does not mention any protection over the windfall gain. In fact, some of the plots of the *redistribution mass* can be captured and sold by the municipality. These resources can help to finance the project costs, construction or reinforcement of infrastructures within the project area (Müller-Jökel, 2002; Tan et al., 2009).

The redistribution of properties between landowners and municipality follows one of two criteria: *relative size* or *relative value*. In the distribution by *relative size*, each landowner is allocated with its relative share

over the *redistribution mass* plots, and the municipality receives up to 30% of the total *redistribution mass* area in undeveloped land, or up to 10% in previously developed land. In the distribution by *relative value*, each landowner is allocated to plots with the same value of the initial parcels or is entitled with monetary compensation for the verified differences. In this case, the municipality captures all the value gain provided by the transformation of land into buildable plots.

Despite the mandatory nature of the German LR, the process flows through a platform of participation and fairness between the municipality and landowners in order to achieve win-win situations (Larsson, 1997; Davy, 2007). This practice is greatly enhanced by some characteristics of the administrative organisation that supports LR procedures. First, there is an independent board nominated by the municipality to take the final decisions. This board of experts is constituted by a lawyer, a land evaluator, a land surveyor and two members of the local parliament (Müller-Jokel, 2001). Also, land market values are systematically assessed by independent organisms promoted by the German government, providing standard values available for public consultation. This information is used in LR property evaluation (Müller-Jokel, 2002), being accepted by both private landowners and public authorities (Tan et al., 2009). Finally, the municipal authorities promote an intensive collaboration with the landowners from an earlier stage, when they discuss about interests and expectations of the project outcome, to the replotting stage, when they carry out the negotiations about the redistribution criteria and the allotment of the new plots.

Japan

The maturation and experience of the application of LR is greater in Japan than in any other country. It is estimated that before 2000, 30% of the urban areas were developed through this technique (Sorensen, 2000). In 1968, the new city planning law increased the promotion of the technique through severe constraints for projects developed without LR. This law also introduced other promotion measures like the “*sticks and carrots*” approach for selected city areas, in which, through rezoning, there were given rewards or penalties to landowners if they developed a LR project or kept the land undeveloped (Sorensen, 2000).

The Japanese LR law allows various combinations of project drivers, such as public or private agents from different natures which constitutes an *implementation agency*, responsible for the management of the process (Sorensen, 2000). However, as highlighted in the literature, the success of the LR implementation depends mainly on the efforts carried out by governmental institutions to persuade landowners for more cooperation (Sorensen, 2007). When the projects are initiated by public authorities, landowners consent is not required, but desired to ease the implementation of the project. Otherwise, in order to be initiated by landowners associations or individuals, it is required a consent of two thirds of all the titleholders (landowners or lessees), and at least two thirds of the total area. The legal content of Japanese *Kukaku-Seiri* provides a clear definition of the association process. In particular, it regulates the interaction between titleholders, in which the democratic vote plays a main role (Souza, 2011). Like in the German method, property is kept private until the approval and publication of the replotting plan. Although the property transfer is allowed throughout the process, the change of use or any other physical change that goes against the LR plan is forbidden until the end of the project.

To finance the project costs and to provide an equitable distribution of benefits and charges, every landowner contributes with a portion of his land. The share is fixed at the beginning of the project as a

result of the calculation of project costs and surplus values of the intervention. Contribution is presented as an estimated percentage of land that represents the relative amount of total project land that is needed for public use plus an area with an equivalent value enough to cover the project costs. The implementation of the land contribution follows the same principle of the German method, through the allocation of the contributed land to the association of landowners.

The value capture by the public authority is not fixed in the LR law. If there is not any capture of the surplus values, the calculation of the contribution share is as described above. Otherwise, the public authority can capture the land correspondent to the project surplus value, by the increase of the contribution share. In this case, the amount of properties returned to the landowners has the same value as their original land parcels.

Spain

In Spain, the LR method, named *Reparcelación*, is used whenever a selected area for development (*areas de transformación urbanística*) has more than one landowner, for which a *LR plan* is mandatory. Along with the designation of an area for development, municipalities establish the *execution system (sistema de actuación)*, which regulates the articulation between the different agents in presence. For each system the law details the steps to be taken and the respective duties and rights for all the agents along the process.

In this plan, besides the replotting layout and the allotment of new plots to the landowners, there are also established the building rights that result for each landowner and the respective compensations according to the application of equalising mechanisms for the differences between initial and final development rights. Also, the development costs are estimated and their redistribution planned, which is included in the calculation of compensations. The LR plan could frame the implementation of a detailed plan, previously elaborated or as a parallel elaboration, or to frame an urban development project for a specific delimited area without any detailed plan. After the approval of the LR plan, an urbanisation project should be made, detailing development costs that will eventually count to make final adjustments of monetary compensations between landowners (Muñoz-Gielen and Altes, 2007; Van Dijk et al., 2007).

According to these systems, LR plan could be made either by the municipality, by an association of landowners (*junta de compensación*) or by an *urbanising agent* (Muñoz-Gielen and Altes, 2007; Van Dijk et al., 2007). The urbanising agent is a private person that wins the right to substitute the municipality in the urban development process in a public tender. This figure can have the same responsibilities as described for the landowners associations, but making profit with the process (around 10% of the infrastructure costs) (Van Dijk et al., 2007).

For the private intervention in development areas it is required the financial guarantee over a percentage of the development costs and the justification of technical feasibility of the proposal and its respective economical and finance solvability. When the private intervention is in the form of an association of landowners, it is required a minimum percentage of landowners subscribing the association, representative of a minimum percentage of land (for example, in the Andalusia region, this percentage is 50% of landowners and 50% of land). By these systems, the landowners who refuse to participate in LR follow a compulsory process or have the option to be expropriated.

The process is financed by the landowners, who give land for public purpose according to the plan, and share the construction and project costs between them through monetary compensation. There is also a value capture of 10% of the development rights assigned to the development area (according to the Spanish land law), which means that the municipality should receive plots of developed land with this share of the total of the building rights, or optionally, equivalent monetary compensation. The equalising mechanism also relies on the development rights granted. The law defines a multi-layered system of equalisation, first through land classification zoning by the local plans, then subdivision of zones in redistribution areas (*area de reparto*), allocating each area with one unique unitary development right (AU). Each unity of AU is valued and the conversion into building rights according to its future use is clarified in the LR plan (García-Bellido, 2002). The differences between development rights and the effective building rights allotted by each owner in the LR plan are subject to monetary compensation, which can be added to the redistribution of development costs. The nature of the compensation measures, to cover costs, to equalise differences between landowners or even to consolidate properties (voluntarily), can be either monetary or by the transfer of development rights, that could be acquired by the urbanising agent or other landowners.

4.2 Comparative Analysis

The case-study analysis showed several differences between countries, not only in the way they apply LR schemes, but also in the purpose of LR application. Table 1 represents the hierarchy of the objectives pursued by LR process in the four countries based on their practical experience or legal framework. Despite the differences in the main goal, presumably related to the needs that justify this technique, all the countries studied use LR as a multi-purpose tool, for urban development.

Table 1- Comparative analysis of the objectives pursued with LR.

	Japan	Germany	Spain
Promotion of urban projects with multiple landowners	○		○
Efficient development of infrastructure and other facilities	○	○	
Efficient implementation of detailed plans		○	○
Equitable distribution of benefits and charges	○	○	○
Value or betterment capture	○	○	○
Adjustment of cadastral structure	○	○	○
Promotion of urban development policies	○	○	○
Constitution of public reserve land	○	○	○

○ Main objective; ○ Secondary objective; ○ Other objectives.

The procedures are widely different among the studied cases (Table 2). Spain and Japan consider a broad spectrum of possibilities of the public and/or private participation in LR. The opposite situation occurs in Germany, where only the municipality has the right to undertake LR projects.

Table 2 – Comparative analysis of the legal framework.

	Japan	Germany	Spain
Execution systems diversity	○	○	○
Regulation density	○	○	○

○ Strong; ○ Poor; - Not specified in the legal framework

The Japanese and German cases have in common the public effort over dialogue, negotiation with private landowners, in opposition to Spain. As stated, even with private initiative, Japanese authorities struggle to make LR projects successful, having a much more active role than Spanish authorities.

Table 3 – Comparative analysis of the articulation between public and private agents.

	Japan	Germany	Spain
Local Administration support in private projects	○	-	○
Landowners intervention in public driven projects	○	-	○

○ Strong; ○ Weak; - Not specified in the legal framework

There are several differences in how the development costs are paid between the analysed countries (Table 4). In Japan, the financial liability of the project relies on the cost-recovery land while Spanish and Portuguese models depend mainly on private or public funding. However, in Spain it is possible to finance urban development through the sale of building rights by the municipality or by an urbanising agent. Nevertheless, the experience shows that the landowners prefer to pay his share of development costs directly through monetary redistribution (Van Dijk et al., 2007). In Germany the financing of urban development can be clearly distinguished from the other countries, since municipality does not consider the development costs in LR. Even though, the capture of surplus-values could be used to finance the infrastructures of LR area. The capability of the project to be financed without external investment (public or private) is then stronger in Japan or Germany, than in Portugal or Spain.

Table 4 – Comparative analysis of financing system

	Japan	Germany	Spain
Responsibility for LR costs	Landowners association or Public authority	Public authority	Landowners association or Public authority or Private investor
Cost recovery	Cost-recovery land, public subsidies (direct fiscal income)	Betterment compensation (Cost-Recovery land)	Building rights, Monetary compensation
Costs included in LR model	Basic Infrastructure	No costs included	Basic infrastructure, compensation costs
Self-financing capability	Strong	Strong	Weak

Among the studied countries, it can be found two families of countries in the way compensation mechanisms are applied in LR. In Japan and Germany, equalisation criteria and compensation is based in the size or in the value of land; instead, in Spain, the bottom line for equalisation are the development rights and their respective value.

Table 5 – Comparative analysis of compensations framework

	Japan	Germany	Spain
Compensation types	Land and monetary adjustments	Land or/and monetary	Development rights (attached to land plots) And
Equalising Criteria (property valuation)	Area weighted by street distance coefficients (not regulated)	Area or	Development rights weighted by urban use
Value-capture	Variable	100% (according to differences between property values before	10% of all development rights

5. Discussion and Conclusions

LR is one of the most valuable tools for urban development, as proved by some successful experiences evidenced worldwide, like the Japanese or the German cases. The practice showed that the transfer of this method requires huge efforts and its effectiveness is far from great, due to the specific conditions of each country that are connected to the application of LR (Hayashi, 2007). For that reason, each country adopted its own adjustments or even new configurations of the LR scheme in order to have a better fit to their own characteristics. The comparison between the selected countries showed evidences of the differences between LR models, even if there is a similarity between Portuguese and Spanish LR methods, and between Japanese and German LR methods. Despite the two patterns of LR methods, the characteristics for the application of LR vary when comparing the four countries.

More important than the transference of a whole method, are the lessons that one country with a consolidated application can give to a country with less experience. Portugal is one of many countries in the world that introduced LR regulation with little success. For this reason the transferability of some characteristics that could improve the Portuguese application was assessed. Despite the success of some characteristics framed in a particular LR schema, it was concluded that its application in Portugal would be likely to fail. Nevertheless, some characteristics applied in the analyzed countries could be adopted in the Portuguese LR schema providing valuable improvements, as shows the **Table 6**.

Table 6 – Transferability analysis of international practices to the Portuguese context.

	Attractiveness	Efficiency	Feasibility
Individual and collective meetings at early stages		●	●
Independent decision boards	●	●	●
Obligation to enter LR process	●		●
Reference land market values	●	●	●
Incentive instruments (fiscal, financing, urban)	●	●	●
Contribution share mechanism	●	●	●
Clear and detailed regulations	●	●	●

● Neutral
 ● Negative influence
 ● Requires other changes to be an effective influence
 ● Positive influence

The lessons learned from Spain, Germany and Japan to the Portuguese LR schema could be described in three main issues: i) proactive administration; ii) detailed regulation; iii) incentives policy.

Concerning the first issue, the changes in the system could consist in the technical reinforcement to deal with LR; the improvement of the cohesion between different public bodies; systematic data collection of trustful information over real estate markets for landowners, municipal authorities and investors; and also cultural changes towards a more open relationship between landowners and public authorities.

Regarding the second issue, it was concluded that in some matters of the Portuguese legal framework of LR, the degree of detail seems unclear and insufficient to ensure good practices. Although it could be argued that the law should focus mainly on essential principles and guidelines of LR (in order to promote greater flexibility in its execution), more detailed regulations for some matters seem to be lacking concerning private participation in LR.

Finally, for the incentives policy, the Portuguese practice may learn to use fiscal or development rights benefits or penalties to promote the cooperation of landowners.

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