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Testing Land Readjustment in Colombia: the equitable share between stakeholders

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1 Summary

Land Readjustment, a land management tool that encourages the voluntary participation of landowners to assemble plots (Hong, 2007), developing the projects by sharing the value of the land equitably (Hong & Cheng, 2014), to recover the costs of infrastructure and services (Doebele, 1982), has been implemented in Colombia since its legal introduction with law 388 of 1997. Even though a legal framework exists, there are institutional deficiencies in the implementation process of Land Readjustment (LR) in Colombia, there is the possibility of landowners not participating voluntarily, and the leadership of the private developers might not be guaranteeing equity.

Therefore, this research aims to test the equity between stakeholders of Land Readjustment (LR) projects in Colombia on Sharing the Value of Land.

By doing a random representative sample of projects around the country, and gathering quantitative information from the documents that enacted each of the projects, and qualitative data from interviews conducted with key actors in specific projects, this research will compare, the results obtained with the statements of Land readjustment theory.

By conducting this research, it was possible to find that, there is s a statistically significant difference, between the benefits that each group of stakeholders receives, and the contributions they do. There is also evidence that the original landowners are not participating in the Land Readjustment projects. With this findings it can be concluded that Land Readjustment projects in Colombia differ from the theoretical Hypothesis, because the fact that, original landowners are being bought out by other stakeholders, contradicts one of the main characteristics of Land Readjustment, the voluntary Land Assembly method; and the action of developers, receiving more benefits than what they should, has created an inequitable distribution of the benefits, deviating from what theory has stated.

It will be important that Land Readjustment projects in the future, involve the original landowners in the project development to maintain the transaction costs low. Furthermore, it is essential that municipalities do an assessment process after to enactment of the projects, to accompany the implementation process, and guarantee an equitable distribution of benefits and effective implementation of the projects.

2 Keywords

Land Readjustment, Colombia, Value Sharing, Equity, Stakeholders.

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4 Foreword

More than 180 Partial Plans have been enacted ever since Land Readjustment was implemented in Colombia after the law 388 of 1997. Those projects framed the principles of Land Readjustment as part of the tools that Partial Plans have for urban development, namely, the possibility to recover the costs of development, the voluntary participation of landowners and the equitable distribution of the costs and benefits. It is important to review the process of implementation of those projects contrasted to the theory, to have a general picture of the tool in the Colombian context. Moreover, have the possibility to analyse if those principles are being implemented according to theory almost 20 years after.

The approach taken focuses on the Land Readjustments inside Partial Plans, previous researchers analysed the context of the partial plans without getting in-depth on the principles of Land Readjustment. On the process, more than 30 Partial Plans were reviewed in several municipalities around the country, information was gathered only from those that implemented any form of Land Readjustment in the projects. Therefore, several projects were discarded because did not fulfil the requirements this research had.

This research provides a review of the main principles of Land Readjustment (LR). First, it introduces the background and problem statement of the research. Second, it analyses the main concepts to be tested by reviewing the theory available about Land Readjustment, Land Value Capture and the increase in the value of land. Third, it presents the methodology used. Finally, the research findings are described and conclusions are drawn, offering recommendations to municipal officers, city officials, landowners and active citizens on how to benefit from the principles of Land Readjustment, improving the performance of the urban projects develop in the country.

5 Abbreviations

IHS	Institute for Housing and Urban Development
LR	Land Readjustment
DANE	National Statistics Department – Departamento Administrativo Nacional de Estadística
POT	Land Use Plan – Plan de Ordenamiento Territorial
PP	Partial Plans
LVC	Land Value Capture
LVS	Land Value Sharing
UAU	Urban Action Units
UG	Management Unit – Unidad de Gestión
PILaR	Participatory and Inclusive Land Readjustment
DTS	Technical Support Document – Documento técnico de Soporte
FAR	Floor to Area Ratio
BRT	Bus Rapid Transit system
M	Mean
SD	Standard Deviation

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Chapter 1: Introduction

This chapter presents the general framework of this study. First, a background of Land readjustment in Colombia will be analysed in five different categories; Legal, Governance, as a Land Management tool, as a planning tool and as a financial tool. Second, the problem statement will be presented, divided in the same categories. Third, the research objective, the research question and subquestions are introduced. Fourth, the significance of this study will be outlined. Finally, the scope and limitations that the research presented will be discussed.

1.1 Background

According to the 2005 census, Colombia had 42,888,594 inhabitants, 74.3% of whom are living in urban areas. The National Statistics Department (DANE) estimates that the population will reach over 48,034,562 inhabitants by 2015 (DANE, 8 March, 2015). Urban population has increased from 31% in 1938 to 57% in 1951 and about 70% in 1990 and it has increased by 3.1% approximately between the 1993 and 2005 inter-census period.

This presents a context where, the majority of the population has been living in urban areas since the 1950's. The major population growth caused by the migration from rural areas to cities had already happened, and where local governments have full responsibility on the development of the territory.

1.1.1 Legal

Land Value Capture instruments in Colombia have a long-standing tradition, ever since the 1921 act 25 (Congreso de la República de Colombia, 1921) for Betterment levies. In recent years three main national acts have changed the urban policy panorama of Colombia putting the country again as a reference for Latin America (Rodríguez, 2012, p. 108); The 1989 Urban Reform Law, the 1991 reform of the Constitution and the 1997 Territorial Development Law.

The 1989 Urban Reform Act (Congreso de la República de Colombia, 1989) is the first law that acknowledged the importance of the urban factor in the development of the country. Since 1960s the expansion of cities and its population, and the lack of urban policies created a state where social inequalities, low housing quality and supply, lack of infrastructure, negative environmental externalities and the lack of finance tools to capture the value of land were the main problems of the populated cities (Rodríguez, 2012, p. 19).

The 1991 new Constitution (Asamblea Nacional Constituyente, 1991) introduced the principle of solidarity and the concept of the bundle of rights, framing the rights and responsibilities for landowners. Moreover, it allowed for a deeper conception of the principle of the social function of property, including an environmental dimension. Constitution also introduced the concept of zoning to be implemented by the local authorities.

Finally, the 1997 act 388 (Congreso de la República de Colombia, 1997), also known as the Territorial Development Law, introduced another two other principles: the public function of urbanism, and the equitable distribution of cost and benefits. Together with the ones introduced in the 1991 Constitution, set the basis for Land Readjustment (LR) to be implemented in Colombia.

1.1.2 Governance

In terms of Governance, "Colombia is a Welfare State, organized under a unitary Republic, decentralized and with full autonomy of territorial entities such as departments and municipalities" (Maldonado, Pinilla, et al., 2006, p. 27). This entails that local governments have full governance over the territorial functions and resources, including the generation of taxes, to fulfill their functions, after the 1991 Constitution. Each municipality is governed by elected mayors and councils, who hold office for four years, its main functions are: providing public services and infrastructure, fostering well-being, promoting community participation, and organizing the territory. Furthermore, local governments have two basic tools to act over their territory: the Municipal Development Plan, which sets the goals, programs, and projects for each electoral period, and the Land Use Plan (POT). Both consulted with the community and approved by the city Council.

1.1.3 LR as a land management tool

Another aspect to acknowledge are the issues of land connected to Land Readjustment (LR). Land property is a right in Colombia and also fulfills a social function. "land management tools have proved to be effective in terms of making visible increases in land value," (Rodríguez, 2012, p. 116). Even though urban landowners learned to understand the principles of the rights and duties of their properties, it remains complex for rural landowners. Their land has rarely been subject to high taxes, therefore, they had captured the value of windfalls (Alterman, 2012) like roads and other infrastructure, as well as, being subject to subsidies from the government for agricultural purposes.

Traditionally the cities have been developed on a lot by lot basis, leaving no space for amenities or infrastructure. Since landowners are reluctant to cooperate, developers in Colombia have used complex long-term processes for the acquisition of land, in order to achieve land ownership of adjacent plots, and create a Plottage Value when aggregating the plots. Sometimes to aggregate the plots private real-estate trusts are created, giving landowners the possibility to participate in the projects with their land, and receive in-kind payment for their contribution, most of the times landowners will receive apartments in the buildings developed.

One important aspect that one has to take into account when analyzing land in Colombia is the context of land within the civil war and its effects in the use and ownership of land. "In Colombia, forced displacement – crime against humanity – is a massive, systematic and long-lasting phenomenon extensively linked to the control of strategic territories. … there are economic and political interests that put pressure to the displacement of the civil population from their land and territories. … cannot leave aside interest from The businesses sector that also has contributed to propitiate displacement and the appropriation of important territories. … some appropriators used violent mechanisms of dispossession, others appealed to legal resources to formalize the land taken and some others took advantage of the market vulnerabilities to acquire land at low cost." (Grupo de Memoria Historica GMH, 2013, p. 71-76). In that document, they also analyze the phenomena of inter-urban displacement and the case of the "Comuna 13" in the city of Medellin[1] where 3.503 inhabitants were displaced within the city boundaries between 1980 and 2009.

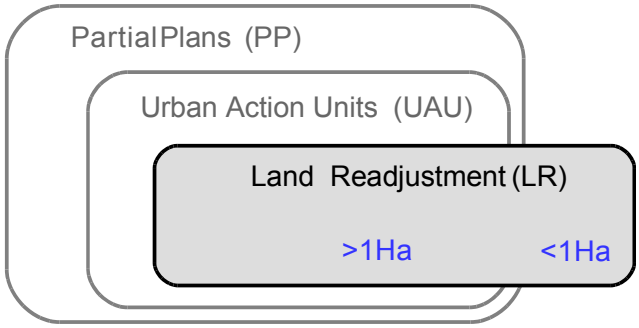
[1]The state of war in Colombia, as narrated by Grupo de Memoria Historica, takes the concept of civil war that Waldmann (1999) framed, understanding that it is not only the involvement of civil society in the conflict what makes a civil war, it also entails a complex network of interactions from different actors. The fight to control the territory between the guerillas and the paramilitary groups in "Comuna 13", a borough of Medellin, displaced civil population between neighbourhoods inside the city, some of them had already lost their rural land and got displaced to the urban periphery. As explained in the book, most of the intimidation technics used in the rural displacement were also used to force the citizens living in "Comuna 13" to leave their homes.

1.1.4 LR as a planning tool

The 388 Law also introduced the planning system, adopted from Spain, that presents a scaled base intervention system that starts by a statutory Land Use Plan – called Plan de Ordenamiento Territorial (POT) – and two tools for local intervention the Partial Plans (PP) and the Urban Action Units (UAU) as illustrated in figure 1.

As a planning tool Land Readjustment (LR) in Colombia is implemented as a tool within the Partial Plan (PP) instrument, therefore it is important to understand the concept of the Partial Plan (PP) as a intermediate scale planning tool that develops a specific area of the city to achieve the objectives of both the statutory Land Use Plan (POT) and the Municipal Development Plan. Whereas most of the Land Readjustment (LR) projects are framed by a Partial Plan (PP), not all Partial Plans include Land Readjustment as a tool to be developed.

Figure 1: The context of Land Readjustment as a planning tool.[2]



The definition of Land Readjustment (LR) within the law 9 of 1989 is aligned with the one that scholars like Hong (2007a) proposes. It is based on the voluntary association of different actors to redevelop an area, providing the necessary infrastructure and services in order to achieve the highest and best use of land, and give back land to the owners in-kind payment, or in some cases in cash.

1.1.5 LR as a financial tool

Finally, Partial Plans have demonstrated its capacity to finance urban development in a sustainable way. There is the debate of Land Readjustment (LR) as a financial tool within of the Partial Plan (PP) strategy. Since the Partial Plans (PP) employ not only the Land Readjustment (LR) method but also other Land Value Capture tools, such as development exactions or the plus-value tax, the LR effect as a Value Capture tool remains uncertain.

Land Readjustment as a Land Value Sharing tool and the procedures to achieve agreements between landowners will be explained in Chapter 2.

1.2 Problem Statement

This last aspect is one that needs further analysis, whether or not LR is being used as a tool to mobilize the value of land.

[2]Source: Elaborated by the researcher based on (Pinto, 2005).

1.2.1 Legal

The policies that support and bring Land Readjustment (LR) into the Colombian context, merely presents the instrument but do not detail its regulations and constraints, leaving the concept of LR on a superficial level. In those laws, the concept is only explained in articles 77 and 78 of law 9 of 1989, which law 388 references in order to frame the concept but there are no deeper specifications of the instrument. The Japanese case on the contrary (Sorensen, 2007), has specific legal documentation on Land Readjustment (LR). Moreover, it details the requirements for the landowners to agree on a project, leaving little room for expropriation. According to Rodríguez (2012, p. 109), other instruments like development exactions, are used to capture the value of land, because Land Readjustment (LR) lacks the proper legal base to redistribute the value of land.

1.2.2 Governance

Since there is no specific legislation for Land Readjustment (LR) implementation at national level, it is the task of the local government to create those regulations. In case of Bogotá or Medellín and some of the major cities in Colombia that do have the governance capacities to create these laws, they have implemented them in their Land Use Plan (POT) or as a regulatory framework. In this cases, the context could be analyzed on how they implemented this tool. Apart from those cities, however, the low government capacity on most of the cities and middle or small municipalities, reduces the potential of the tool, because of the low capacity to implement it.

1.2.3 LR As a land management tool

When the public sector has participated in Partial Plans (PP), it has used expropriation or land acquisition to develop the projects, whereas in the private sector only some projects have been developed through a voluntary participation of the landowners. This challenges a fundamental condition of the Land Readjustment (LR) tool, the voluntary participation of original landowners (Hong, 2007a). More importantly, it questions the way urban land is managed in Colombia. Since land is one of the issues that has had the country in a state of internal war for more than 50 years. Moreover, it is of paramount importance to analyze if the intimidation technics that rural land had in the past are being replicated in the urban land tenure and management system, as seen in the case of the “Comuna 13” in Medellín presented by Grupo de Memoria Historica GMH (2013) and therefore coercing the way landowners participate in Land Assembly processes.

1.2.4 LR as a planning tool

The role of the government as a mediator in the process of Land Readjustments is crucial, as shown by Rodríguez (2012, p. 116) more than 50% of the Partial Plans (PP) have been private initiatives and in cities like Bogotá or Medellin public intervention accounts for 16% to 23%. Since the government is not an active stakeholder in those processes it has no effective means to ensure the inclusion of unprofitable uses. This leaves the tool in the hands of private developers that in order to achieve greater profits could generate processes of gentrification and exclusion of the lower income levels.

1.2.5 LR as a financial tool

Regardless of the match between the concept of Land Readjustment (LR) and its inclusion under the Colombian law instrument of the Partial Plans (PP) in the implementation field, as a tool for efficient urban planning, it has not demonstrated its full potential to include low profitable uses and infrastructure as presented by Smolka (2013a).

To conclude, LR in Colombia has an institutional legal framework, which allows the tool to be implemented by the municipalities in different contexts. Nevertheless, the implementation phases of the projects lack of a regulatory framework, preventing municipalities from capturing the full benefits of the tool, as it will depend on the capacity of each municipality to regulate the tool, which in some cases, there is no capability to do so. Furthermore, there is doubt that the projects are involving the original landowners on a voluntary basis. Since this is a paramount characteristic of LR, it is important to research if this condition is being fulfilled. Finally, Most of the projects are being led by private developers, who as a consequence of their objective to make a profit from the developments, could be gaining more benefits than what they should, or excluding unprofitable uses, unbalancing the equitable distribution of the benefits and the efficiency of the urban environment.

1.3 Research Objective

This research aims to test the equity of stakeholders in Land Readjustment (LR) projects in Colombia on Sharing the Value of Land.

1.4 Research Question

Are the stakeholders of enacted Land Readjustment (LR) projects in Colombia Sharing the Value of Land equitably?

1.4.1 Sub-questions

- Are the landowners of Land Readjustment projects voluntarily joining?
- What is the difference in the value of the land?
- How are the cost and benefits included in the calculated budget?
- What is the percentage of value captured by each stakeholder?

1.5 Significance of the Study

This research can contribute arguments in the current debate between experts and developers on who should pay the cost of infrastructure and back the fact that those costs are not being transferred to the end users. It can also identify loopholes or misconceptions in the law, allowing policymakers to use the findings as a base for new regulations or improving the regulatory framework in place.

Comparing the potential of Land Readjustment with other land assembly tools can build arguments as part of the body of knowledge, specially in a context where different forms of Land Assembly coexist in the legal framework and are being used, compared to other countries context where only one assembly technic is in place. Moreover, further implementation of the findings of this study can encourage landowners to participate in re-development projects within the Colombian cities that are dealing with lack of land supply in a more collaborative and equally informed way.

1.6 Scope and Limitations

1.6.1 Scope

The research will Test Land Readjustments projects, within Partial Plans, that has been approved by decree by the local governments. It will not focus on partial plan projects that were developed by using other kinds of Land Assembly technics.

1.6.2 Limitations

The number of finished LR projects within PP was insufficient, diminishing the capacity to test its implementation phases. The projects were, therefore, tested at the moment of approval by decree, since it is a standardized milestone in the process, regulated by the decree 2181 of 2006. The main interference factor was the late response from the municipal offices, some municipalities did not publish the documents and the time constraint of the research set a high challenge on analysing all the sampled projects. Early collection of the information was key to overcome this threat. The use of the legal procedures as the Colombian law allows for citizens to ask for public information (acknowledging that this can take a minimum of 15 working days) made the data available. Some projects in the sample were exchanged with others, because of data availability, which maintained the balance in representability.

Chapter 2: Literature review

This chapter presents a theoretical review of the main concepts that support this research, describing the main characteristics of LR, and the different perspectives that authors have depicted from different case studies. Based on the theoretical review, a definition of the main research concepts will be given, the theoretical framework that was tested is described afterwards.

2.1 Theoretical Review

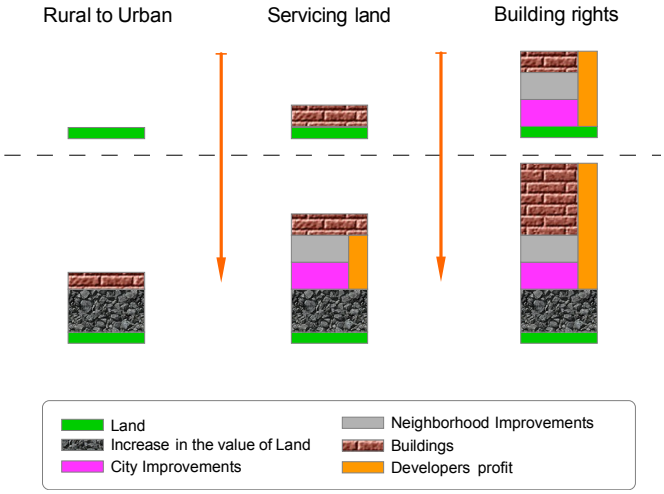
The concepts analysed in this part are presented in three sections. First, the increase in the value of Land will be outlined. Second, the concepts of Land Value Capture, Land Value Sharing and mobilizing the value of land, will be discussed and, third, Land Readjustment, definition, process and its characteristics will be analysed.

2.1.1 The increase in the value of Land

In order to measure the capacity to capture the increase in the value of land, the factors and the stakeholders involved who simultaneously influence and benefit from those factors, will have to be discussed first.

There are factors other than the macroeconomic ones that influence the value of land (Smolka, 2013b, p. 4), generating what Hagman and Misczynski (1978) refer to as wipeouts and windfalls. These factors are related to the urbanization process in the cities, that create dramatic changes in the value of land. When rural land that is converted to urban land it can increase the value as much as 400%, according to the analysis of the data on different cities presented by Smolka (2013b), this increase is known in economy as the urban multiplier. A graphical description of those factors is illustrated in figure 2.

Figure 2: Increase on the value of land by public action.[3]



When the government provides services for an area of the city, it also increases the value of the land, because the direct cost of providing the services like paving a road or extending the water supply pipes are lower than the value it creates on the prices of those plots of land that are being serviced. Changing building rights or zoning regulations like changing land uses

[3] Source: Elaborated by the researcher based on Morales-Schechinger, C., (2015b) and Smolka, (2013b, p. 8). The figure is illustrative of the process, it is not ratio accurate.

from residential to commercial, or increasing the floor area ratio (FAR) also has a dramatic effect in the value of land as presented by (Borrero Ochoa, 2007).

All these windfalls are always capitalized by the landowners without the proper regulation put in place. This is contrary to John Locke's theory are not doing any work or investment on their land that make them entitled to claim those benefits (Alterman, 2012). In her analysis of windfalls, Alterman (2012) also presents theories like Rousseau's that set the base for the notion of 'the social function of property'. Now present in most of the countries' laws and regulations that acknowledged the rights of landowners, and also the obligations they have to the community as a whole. This will by no means release the burden from the implementation process, since it will always be hard to answer Donald Shoup's question[4] that in certain way tries to harmonize Henry George's argument[5] with John Locke's one,[6] resulting in the landowners doubting why owners should pay for it.

To Conclude, there is an increment in the value of land that is not the product of the landowners' effort. The increase is a substantial multiplier of the value of land produced by the society as a whole or the actions of the government that represents it. Even though there is a constant debate on who should be entitled to claim the increments, there are regulations in place that assign it to the actors that are creating the increase of the value.

2.1.2 Capturing, Sharing and Mobilizing the Value of Land

This generated increment in the value of land has the potential to benefit all those who created it, not only the landowners who hold the land. Many scholars and organizations have referred to this concept as “Capturing”, “Sharing” or “Mobilizing” the value of land.

According to Smolka (2013b) “value capture refers to the recovery by the public of the land value increments (unearned income or plusvalías[7]) generated by actions other than the landowner’s direct investments”. He argues that this idea is based on the concept of equity, since “Value Capture” (LVC) recognizes that there is some part of the increment on value that was created by the landowners' efforts. That part should be capitalized by those. Whereas the value that the public or the society as a whole has created also goes back to benefit them, in the proportions each has contributed. He also sees it as a sustainable system of financing city development, since new infrastructure will be constructed with the appreciated value of the land.

Smolka (2013b) highlights three important conditions of Land Value Capture (LVC). First, the base to calculate the value to be captured. It should not include the buildings, only the land. However, it also refers to the fact that this value is a calculation assessed by property appreciation methods and therefore not the market value. Only in technics such as CEPACs in Brazil[8] it can achieve market value since in those cases it is transacted in public auctions. Therefore, it reflects the real value that the buyers are willing to pay. Second, LVC is relative to local regulations. Therefore, they condition the way actions other than the landowners are understood, in a basic legal frame could be interpreted as only active participation of the

[4]“Why is it so difficult to fund public infrastructure that increases the value of serviced land by more than the cost of the infrastructure itself ?” (Shoup, 1994, p. 236)

[5]“... a takings by the community, for the use of the community, of that value which is the creation of the community” (George, 1962 edition: 421) cited by Alterman (2012).

[6]“The great and chief end... of men uniting into commonwealth, and uniting themselves under government, is the preservation of their property;” (Locke, 1698).

[7]Translated as plus-value, is a way to denominate the increase of the value of land in Spanish speaking countries.

[8]For further information on CEPACs refer to Sandroni (2010) A new financial instrument of value capture in São Paulo: Certificates of Additional Construction Potential.

government. However, in a more ample legal framework can also include the windfalls from the society as a whole. Regulations could also be a barrier to implementing Land Value Capture (LVC) tools since they might represent the ideology of the territory, which could be contrary to the concept. Third, the author presents the term “mobilization of the land value increment” instead of public appropriation, because it gives a broader frame for various actors to benefit from it, including the landowners.

The concept of “mobilizing the value of land” as presented by Smolka and used also in collaboration with other authors (Smolka and Amborski, 2007, Smolka and Iracheta, 2000), refers to a situation where the value of land is not captured but rather mobilized, in the sense that it is not appropriated by the government, so it can be used to provide services or infrastructure. Hence, it is pulled together and used to provide those needs benefiting the community as a whole. In particular it can be implemented in large-scale urban projects, where there are landowners that are simultaneously contributing to the cost and receiving the benefits as one sole person.

There is another concept that resembles this perspective of managing cost and benefits as two parts of the same bundle, that is “Land Value Sharing”. The concept was proposed by the Executive Director of UN-HABITAT, Joan Clos (Hong and Cheng, 2014, p. 1). Land Value Sharing (LVS) acknowledges that the increase of the value of land is not only created by the actions of the owner or its inherent value but by the actions of others, as explained before. Therefore, those who created the value are entitled to receive the benefits of it, sharing the benefits amongst all actors. The term has been recently used by Mutero (2014) and promoted by the Global Land Tool Network GLTN (2013) and UN-Habitat (n.d.) as part of a new approach to Land Readjustment called “Participatory and Inclusive Land Readjustment (PILaR)” (Hong and Tierney, 2014). Land Value Sharing (LVS) is mentioned as a synonym of Land Value Capture, this new concept tries to reflect the capacity of the Land Readjustment tool to create inclusion and participation, by sharing the costs and benefits between all stakeholders.

There are a few reasons why people refrain from implementing Land Value Capture (LVC) tools, some of which Smolka has categorized in “the four I's”. Ideology, which has to do with the governing ideas of a society and it cannot be changed. Interest, from landowners or developers, on not being willing to lose this value, and the power they might have to influence the decision-makers. Ignorance, by arguing that the prices of land will increase and Inertia as people prefer to continue doing things the same way. These ideas are understandable since most of them refer to a preconditioned understanding, which can be simply clarified with arguments as Smolka and Furtado (2003, p. 13) present it.

In terms of types of Land Value Capture tools different authors have classified them in different categories like Smolka and Amborski (2007) categories on taxes, fees and regulatory instruments or Alterman's (2012) direct, indirect and macro instruments. Those classifications can give some structure to a variety of tools that exists to capture the value of land. However, as Smolka (2013b) explains, it does not establish an exclusionary system since there are tools that can be classified in different categories.

2.1.3 Land Readjustment

2.1.3.1 Definition and history of Land Readjustment (LR)

Land Readjustment (LR) is one of those tools that can be classified in different categories by the different authors reviewed in this document, and because it is a complex tool it might lead to confusion on its definitions.

According to Doebele, (1982a, p. 2) "Land Readjustment is simply a method by which the city government, other designated public bodies, or even private associations can participate directly in the process of urbanization and thereby share its profits." His concept of Land Readjustment (LR), as one of the first scholars to write about the technic in English (Doebele, 2007)[9], presents a situation whereby associating the landowners of an area of a city to be developed, the municipality can design a plan that will allocate infrastructure and services in a more efficient configuration. Whereas some of the plots will be used for public services, others will cover the cost of construction of infrastructure, the remaining will be returned to the landowners. The plots will be smaller than before but will have a higher value, since they were urbanized. This will serve as compensation to the takings for public space and infrastructure, making the readjustment cost recovery.

As explained by Hong (2007a) a Land Readjustment (LR) can be developed in four general phases. Other authors describe LR in more phases, like Sorensen (2007, p. 101) who presents seven features of Land Readjustment in Japan, explaining that different Land Readjustment projects can have different procedures although they all share basic ones. The four phases proposed by Hong, present a synthetic view of the procedure to execute a LR project, giving an understandable overview of the process.

Box 1: Case review - Japan

Land Readjustment in Japan (Sorensen, 2007)

Japanese experience with LR is one of the most extensive since the country has implemented the tool in more than eleven thousand projects. As related by Sorensen (2007), a common statement between Japanese experts is that cohesion of the Japanese tradition has allowed for the decision-making process privileges the common good over the individual benefit. However, his analysis of the Japanese LR acknowledges that there are also other conditions that influence the vast use of the tool by municipalities in that country. The lack of other tools in the regulatory framework of Japanese law, the high fragmentation of land ownership, the slowness of land markets and the small quantity of government-owned land, are some of the possible explanations.

In the research presented by the author, there are other findings that are worth highlighting. First, because are findings that enrich the body of knowledge of LR. Second, because the conclusions can be useful for the implementation processes in other countries. Finally, because with the vast experience that the country has had, developing further research can give support to the fundamentals of the tool. Some of those findings are: Understanding that the process of land readjustment is a complex relation between all stakeholders, were agreement and opposition happens at the same time, highlighting the importance of negotiation skills and neutral stakeholders. Realizing that strong motivation is a fundamental for landowners to participate, related to the benefits that landowners could perceive.

The first phase is the Project Initiation where a public or private initiator proposes to assemble land in a specific area of the city. An agency is created with the participation of landowners, the public administration and other actors, to establish a plan and evaluate its feasibility. Involving the public and the owners from the beginning is one of the key elements that differentiate this assembly method from any other. There is no expropriation by the government or early acquisition of properties by companies.

Community Support Development is the next phase. After the government's approval, the participation of landowners is formalized and promoted by the agency, in order to raise the highest percentage of landowners agreement. Afterwards, an appraisal of the properties is done to state the value of the land before and after, and the percentages in which each landowner is participating. Negotiations are held publicly, with all stakeholders present, as to make sure that the benefits are equally shared. This also differences Land Readjustment from

[9]He explains how the concept of Land Readjustment was a result of the 1979 conference. Then terms like, Land Pooling and Land Consolidation were considered by different scholars gather in the conference, and that set the base to publish his book in 1982.

other land assembly methods, because in those cases the negotiations are private with each landowner.

Land Resubdivision and servicing is the third phase. With the agreement of the landowners, a detailed plan is developed. This plan will include the amount of land that needs to be reserved for public uses, the infrastructure and the provision of services that the area needs in order to support the new uses and density, and the financial model that will allow the Land Readjustment to take place. This financial model could be self-financed, by selling part of the land to investors to finance the construction of the required infrastructure and services.

Land Reallocation is the final phase of the Land Readjustment process. After the execution of the plan, the remaining land is redistributed to the landowners in proportion to the percentages each contributed.

A version of this tool was first used in Washington D.C. By George Washington himself, to create the capital of the new nation in 1791. According to Doebele (1982a, p. 7), Lex Addickes, the mayor of Frankfurt-am-Main created the first legal framework for this tool to be implemented in 1902. Ever since it has been implemented in Germany and imported to Japan, the Japanese model was implemented in South Korea and Taiwan, other countries have also implemented Land Readjustment (LR) either as part of the law or by implementing projects.

Land readjustment (LR) has been evolving ever since with different characteristics and names in the different contexts that it has been introduced in. On Western Australia, it was called Land Pooling with the specific characteristic of transferring the tiles to an agency for the scheme to be implemented (Archer, 1982). In Thailand, a variation that was designed as a way to include informal settlers in the project as part of the cost of the projects is called Land Sharing (Rabé (2010). In Taiwan and several parts of Europe, Land Consolidation was the term used to assemble parcels for agricultural purposes (Lee, 1982).

The evolution of Land Readjustment (LR) can be characterized by the goals that it has set to pursue over time, according to Doebele (2007), in the early stages it was focused on the cost recovery goal, in that period where the tool was being implemented by Germany, Japan, Australia and other countries in Asia, this concept was experiencing a Hype and High states of development as Davidson (2014) expresses it in the cycle of concepts; there was a lot of work in refining the technical aspects of LR particularly the self-financing one.

In a second stage, a Hiatus stage, Land Readjustment was focused on the goal of assembling land for urban development, this phase was influenced by the controversies over the use of eminent domain or compulsory purchase to assemble land by the governments. However it also experienced a Hangover phase, since the tool was questioned about its capacity to self-finance, because in Germany and Japan the tool had government subsidies to be implemented and therefore categorized only as a land assembling tool.

The third stage of LR is focused on its capacity to involve landowners in the project development. This is a Hindsight phase promoted by the concept of sharing that UN-Habitat (n.d.) and other multilateral agencies see as a key element in Land Readjustment and which can foster a more inclusive and participatory governance processes (Hong and Tierney, 2014). This stage is ongoing and is meant to wake up the sleeping beauty as Alterman (2012, p. 9) referred to when evaluating its potential.

2.1.3.2 Uses of Land Readjustment

Land Readjustment as an urban tool has been used in three areas. First, it has been used to assemble rural land to be used for urban purposes in the peri-urban fringe of cities, as used in Thimphu, Bhutan (Norbu, 2014) were in 1999 the urban area was expanded from 8 to 26

square kilometres, and the challenge to urbanize that area was tackle by 12 Local Area Plans (LAPs) that introduce Land readjustment as the tool to develop those areas. Besides the Bhutanese case, the joint venture agencies in Khed and Magarpatta, India (Balakrishnan, 2014) created with the purpose to develop specific areas of rural land in those cities, are also examples of LR used in the urban periphery.

Box 2: Case review - India

Land Cooperatives in India (Balakrishnan, 2014)

The author present two LR projects developed in the periphery of Pune City. One, Magarpatta, was a land cooperative where rural landowners voluntarily joined. The other, Khed, was a government lead project were the regional bureaucrats mediated between agrarian and industrial landowners to create a Special Economic Zone (SEZ).

The case of Magarpatta created a trust where landowners became shareholders, restricted its ownership to agrarian owners and lease the land to developers and industrial businesses. When the readjustment was finished, serviced land increased its value by 1,000% in 10 years, benefiting even the smallest landowners, although the field workers and informal settlers of the area did not receive any benefit.

Khed City was a project oriented to transform rural land into industrial uses, as the project was proposed opposition upraised from farmers who owned part of the area, the solution was to include those landowners in the venture as shareholders. Further stages of development were planned with other areas, although solid reluctance was found again since the benefits received by the first farmers was perceived as unfair.

The author highlights the fact that these were cases where some of the main attributes of LR were present, voluntary participation, self-financing mechanisms, strong mediating actors. Nevertheless, she also pointed out that the conditions of the areas where those cases took place had a significant impact in the results of the projects.

As presented before, converting the rural land into urban for development is the action of the government that raises the value of land in the highest percentage. Balakrishnan (2014, p. 7) says that in those cases, it goes far beyond recovering the cost of infrastructure. Doebele (2007, p. ix) categorize Land readjustment as the best tool for capturing that increase because it captures the value at the moment of the rural-urban change, and therefore, eliminates the hard labor of charging before or after the event like George's Single Tax[10] or other tools.

Second, LR has been used to redevelop areas in the city that are already urban but lacked services or infrastructure, like the Bangkok's cases (Leerruttanawisut and Rabé, 2014) for upgrading informal settlements with Land Sharing or for achieving a higher and best use of the area which is the case with the Fenicia triangle in Bogotá, Colombia (Pinilla, 2014).

However, concerns about the political controversies of landowners and dwellers because the infill development has more owners than peri-urban projects and, therefore, achieving the consent of landowners is harder, which is the case with Lidata in Addis Ababa (Zeluel and Hong, 2014, p. 17). In addition, since in those cases the developers are attracted to those areas because its central location can be more profitable. There is always the risk of gentrification in the area as explain by Turk (2014), where original landowners are bought out. Therefore, inclusionary policies or practices are needed to create equity within those areas.

Third, it has been implemented in post-conflict or post-disaster reconstruction areas, in those contexts as explained by Hong and Brain (2012) infrastructure and service provision suffer great damages, developments in high risk areas becomes a central discussion and the ownership of land play a key role in reconstruction. That is why LR is a suitable alternative in those cases, as seen on Talca, Chile (Brain and Mora, 2014).

[10]Henry George's proposal of a single tax on land was supported on the idea that, taxes on goods reduces the motivation to produce those goods, taxes on income disincentive people to earn more, by taxing land only, he argued, it would not decrease the production of land since land cannot be produced. Therefore, he advocated that by only taxing land governments could finance all its expenses.

Box 3: Case review - Chile

Land Readjustment as a Reconstruction tool (Brain and Mora, 2014)

After a devastating earthquake in February 2010, which affected infrastructure, commercial establishments, industrial building and more than 220,000 housing units all around the country. A team of the Catholic University decided to introduce LR in Chile, as an alternative to rebuilding affected areas. After a process of discussion with the government, it was decided that two pilot projects were going to be conducted. One readjusting 3 plots and another 6, in different locations of the country. Even though the pilots were not built, the process of implementing a new tool in a post-disaster situation left some important lessons that were shared by the authors. First, community participation was enhanced during the process, the affected residents were in need for a solution, therefore, using participatory tools as LR was important to gain momentum and speed up the process of the projects. Second, neutral negotiators eased the negotiation process, as they did not have a position to defend, hence, their contribution was not compromised to anyone.

2.1.3.3 Characteristic of Land Readjustment (LR)

To understand the key characteristics of LR, it is important to first differentiate LR from other Land Assembly technics. Since as mentioned above, the capacity to assemble land is one of the goals that LR can pursue Although it is not the only tool that can be used to do it. In table 1 an overview of different land assembly methods is presented based on Hong (2007a), Hong and Brain (2012), Morales-Schechinger, C. (2015a), Grimes Jr. (1982) and Alterman (2007).

Table 1: Land Assembly methods comparison

Characteristic\Method	Land Readjustment	Eminent Domain	Land Banking
Assembly method	Participation of landowners	Expropriation, Forced acquisition	Commercial sale
Transaction method	Land-based transaction	Compensation, Cash payment	Cash-based transaction
Payment due	After finishing the project	Before starting the project	Before starting the project
Value	Future market value	Appraisal	Market
Cashflow outcome	Self-financed	High investment	High investment
Negotiation	Multilateral	Unilateral	Bilateral
Negotiation time	Long	Long	Short
Occupants inclusion	Included as beneficiaries	Relocated or bought out	Relocated or bought out
Community	Preserved	Redefined	Redefined, gentrified
Political view	Favorable	Unfavorable	Mixed opinions
Transaction costs	Low	High	High
Resources needed	Negotiating power for convincing landowners to join	Budget for compensation	Budget for acquiring land

**There are other non-assembly tools for project development like project announcement, priority development declaration, pre-emption right, regulatory takings, downzoning, compensation rights, negotiated exaction or cooperation between participants.*

According to Hong (2007a), Land assembly is a major barrier for urban development especially in redevelopment areas where there is a high concentration of owners in a very fragmented territory. Hong explains that in an ideal world there are no transaction costs, and therefore, two owners will be willing to assemble land to benefit from the Plottage Value it creates. In reality each owner will like to obtain the full increase of the value and therefore, the assembly will get to a dead end, and the resolution of this conflict will be costly, even more when there are several owners. This is why Land Readjustment, is considered to be a tool to lower the transaction costs using the voluntary participation of owners.

Other ways to resolve this conflict are Eminent domain and Land Banking. The first, as Alterman (2007) explains is the power of the government to take or expropriate land from the private for public purposes at a just compensation, and this definition changes as local legislations regulate property rights. The second, as explained by Smolka (2013c, p. 18) is buying land to be held until the project can be initiated.

The main difference between Land readjustment and the other tools is the voluntary participation of landowners without selling their land. This factor as presented in Table 1 is the only differentiating factor, that no other tool has, and it is also the reason why it can lower the assembly transaction costs.

The participation of landowners in LR projects is one of the characteristics that has been clearly defined by academics and one of the characteristics analysed by Turk (2008) while comparing Land Readjustment methods in different countries.

The basic concept states that any Land Readjustment should include the landowners because there is no transferring of properties. Nonetheless, this concept has not been applied in some cases and in others cases, it is regulated the amount of minimum landowners needed to start a LR project. However, there are cases like Bhutan (Norbu, 2014), that the projects need to achieve the consent of all landowners, this is possible due to effort of the city officials, who work with the community to explain the LR schemes and convince them to join.

Box 4: Case review - Bhutan

Land Pooling in Thimphu (Norbu, 2014)

The urban perimeter of Thimphu, Bhutan was extended in 1999, to develop that area 12 Local Area Plans (LAP) were designed using Land Pooling as the land assembly technique. Each project had to be planned to fit around 12,000 inhabitants with the infrastructure and services required. As presented in other cases, this was the first time LR was used in Bhutan, therefore, the implementation process was parallel to the experimental one, having particular characteristics as pointed out by the author, the fact that the goal of the municipality, as capital of a happiness oriented country was to "be the best of what the country can be" required and extra effort on involving the population in the development process.

The consultation process involved public meetings, individual consultation with landowners, site visits, media coverage and several other communication techniques. To the point where a dedicated team of professionals was put in place, dedicating more than 50 percent of their time to community management. The participation process started with a few landowners and grew up in number, however, there were citizens that stated they were not consulted.

It is important to acknowledge that, the trust creation process went from total mistrust on the government to mutual understanding and collaboration. Moreover, the importance of learning by experiencing, to the point where there was no law established for LR and still the projects were initiated.

While private Land Readjustments always involve the participation of landowners to be cost-efficient, public LR not always follows this principle. Some of the projects initiated by the government are targeting public interest or equity principles, for example, social housing or pursuing planning or political objectives like transport infrastructure development. Those projects are normally announced to the community that is going to be affected. The direct participation of the government in those cases displace the landowners to an indirect participation role, which challenges the willingness of landowners to participate, bringing legal actions against the project. Therefore, making it time-consuming and in some cases preventing the project to be executed. That is why as Sorensen (2007, p. 110) says that governments should invest in convincing landowners to participate.

There are other benefits that the participatory process can create within LR, which are remarkably different from any other land assembly method. Since the owners will receive a plot of serviced land at the end of the readjustment, the risk of gentrifying the area is lower, because landowners will have the possibility to remain in the area. The participation process will also foster social cohesion, all the collective work that the readjustment needs will be solved in several community meetings, which in the process will create commitment between stakeholders and trustful relationships. It is also a learning process for the stakeholders in terms of understanding their rights but also their obligations (Hong, 2007b, p. 187).

There is the concern that participation will imply high negotiation costs because stakeholders have not been collaborating between them before, so they do not have the experience of working together for the same objective (Doebele, 1982b, p. 15). Therefore, land readjustment only works if there is a well-organized community with previous experiences of working together. In most of the cases cited here, there was no previous experience. As explained by Sorensen (2007, p. 110) there are other factors that influence the cooperation,

such as post-disaster reconstruction; However, as shown by the Thimphu case, achieving the totality of consensus from landowners is possible with a committed team of negotiators.

To be able to work together, stakeholders need to have a certain degree of trust amongst them. There are some contradictions in this statement, holdouts to participate are common, either because they think they are going to lose or not gain from the readjustment, or because each landowner might have its own personal interests in the project. Therefore, the lack of common information creates mistrust issues (Turk, 2008). There has to be trust in the government also, in cases like Japan and Germany this might be true; however, in other contexts this is not a reality. This is why neutral initiators have a crucial role, NGO's, academic institutions or multilateral agencies have played this role in Angola, Chile, India, Bangkok, and other cited cases (Balakrishnan 2014, Leerruttanawisut and Rabé 2014, Brain and Mora 2014). They have involved stakeholders in a continuous participation process where the flow of information has generated a certain degree of trust between them, avoiding a specific actor to get more benefited than the others, promoting global equity concerns such as inclusion of the poor in the projects. Again the argument that there needs to be trustful relations between stakeholders before a Land Readjustment project takes place has been proved not to be a requirement, it would be beneficial for the project but not necessary. What is necessary though is to create that trust by a common ground of understanding and work, mediated by a neutral actor.

Box 5: Case review - Bangkok

Land Sharing in Bangkok (Leerruttanawisut and Rabé, 2014)

The case of Sengki presented by the authors and the explanation of the Land Sharing system in Thailand (Rabé, 2010), introduced how LR can contribute on solving urban issues, such as the informality of land tenure or the difficulty in financing services and infrastructure in urban development. The area was occupied by 132 families with different tenure conditions and some industries, all the original occupants had a lease contract with the landowner at a fixed price ever since the royal family owned. After a fire in the area, some lease contracts were finished because of the hazardous conditions, the evicted families returned to the area as informal tenants since they had no other place to stay. These and other factors constituted the complex system where the project was proposed. The redevelopment kept a warehouse and readjusted the rest of the area to fit the families and a commercial area, destined to be sold and finance the whole project.

This case was documented during the complete process, several conclusions and lessons were found, amongst those, the importance of acknowledging different tenure systems and responding to it with different approaches. Moreover, the complex negotiation process and the importance of the roles played by each of the stakeholders. Finally, the possibility to use the LR tool to include unprofitable uses, in this case, social housing. Nevertheless, it was a case where displacement also happened, either because cost of living in the area increased, making it impossible for families to stay in the area, or because the safe tenure system presented the families the opportunity to sell their properties in the market.

Another key characteristic of Land Readjustment (LR) is the capacity of the mechanism to recover the costs of implementing the project, this characteristic is highly attractive to all stakeholders, since it makes the projects viable without financial burdens. As Turk (2008, p. 235) explains, this is very attractive to municipalities that have low financial capacity to implement projects, to developers who will have a positive return on their investment and to landowners who will appreciate their properties by the collective effort. The way this works is that part of the land that is left after the infrastructure and services are allocated will be sold at market value to cover the costs of putting the infrastructure and services in place.

This is possible because the Land Readjustment is capturing the increase of the value of the land created by the actions of the community as a whole or the actions of the government, as shown by the Bangkok or Ethiopia cases (Leerruttanawisut and Rabé 2014, Zeluel and Hong, 2014).

Box 6: Case review - Ethiopia

Redevelopment in Addis Ababa (Zeluel and Hong, 2014)
The authors addressed the issue of implementing LR to upgrade informal settlements. They presented the case of Lidata, a central area in Addis Ababa were 1,343 families lived in poor infrastructure conditions. The tenure system was a complex mix between owners, renters and informal settlers, which was influenced by the constant changes in the socio-politic development of the country. The project had a focus on the involvement of the community in its development, community meetings were held and agreements signed. A mix land use plan was created and part of the land was leased to finance the project. More than 2,300 new housing units were created including services and infrastructure. The authors concluded that the role of government could have been improved by fulfilling all their commitments and stirring the project in a more structured way. Nevertheless, they considered that the way the project involved the community and all the stakeholders in the process is worth recognizing.

Since this could also be a goal of the project outcome it can be affected positively or negatively according to other factors in the project such as, the availability of accurate information or the reluctance of landowners, also to external factors like the market behavior or the regulations over imposed to the project such as including unprofitable uses. What has to be clear here is that the Land Readjustment method has the capacity to recover cost by mobilizing the value of land; the success of it will be determined by the relation between the appraised increase on the value of land and the magnitude of cost that are included in the project. If the result is positive the surplus benefits will be shared by the stakeholders, however, if the burden of the cost is higher because of internal factors, the losses should be assumed by the stakeholders. Although, if it is because of external factors government may need to subsidize the project (Needham, 2007, p. 122).

A way to control the costs is to reduce the quantity or quality of the services or the infrastructure provided, as shown in the Korean case explained by Kim, Hwang, et al. (1982, p. 128), on the risk of creating subnormal conditions. Another way is to make those costs part of the responsibilities of the government, as in the cases of Germany or Turkey. This varies depending on the context, some governments have lighter regulations such as assuming only the right of way for roads, others have bicycle lines and public transportation included as in the case of the Netherlands.

One of the costs that a project can receive is oriented to the goal of including housing for low-income families (Needham, 2007, p. 126). Since this plays a role against the market value, because it might not be the highest and best use for the land, or because segregation conditions in the territory are conditioning the market prices. Sometimes higher income buyers might not want to live close to lower income families. Different strategies have been implemented to balance the equation such as grouping social housing in one area of the projects, or increasing the FARs to compensate the loss.

Sharing the costs and benefits between stakeholders is also another characteristic of Land Readjustment that is clearly linked to the cost recovery. The theory in this aspect says that there has to be a common understanding of the fact that the bundle of rights of property comes with obligations (Jacobs, 2015)[11]. Nevertheless, as explained before on the participation principle, this is not a required precondition because this knowledge can be built in the process. Sharing rights and responsibilities in Land Readjustments implies sharing information and personal goals, so the body of knowledge is stronger and the expected outcomes are clear, this will set a framework of transparency and fairness that allows to distribute the costs and benefits in and equalitarian way, understanding that those who take the risks should receive the benefits, as the examples presented by Turk (2008). If the

[11]He analysed the rationale of private property, and how we can understand the bundle of rights and obligations, also related to the Kelo case that is linked to the takings using expropriation for urban development.

government has an active role taking most of the burden in economic terms, they should receive those benefits that at the end will benefit the society as a whole. However, if it is the government that is imposing burdens like inclusionary housing, then subsidies should be put in place, so the benefit of the other stakeholders does not suffer from takings, which might jeopardize the project because the costs are higher than what the increase on the value of land can support.

Another characteristic related to the cost recovery is the inclusion of infrastructure costs. This characteristic is based on the capacity of Land Readjustment to support higher densities and more efficient distribution of infrastructure and services (Turk, 2008, p. 238), also on the assumption that landowners, who will stay in the area, will be willing to pay for the construction of infrastructure since they will benefit from it. However, in some countries people perceive this to be part of the government's responsibility. Therefore, it might not be a universal characteristic, even though the estimated value of the land in the aftermath could cover those costs. In some of the cases presented, the project did cover the costs because it is also more efficient to service an area while it is being developed. If it is done before it is occupied, the investment will depreciate; and if it is done after it might be stopping development or affecting the market prices of the new buildings that are not serviced yet.

This cost can be included, however, the important question is how much? Since the densities can always be increased to cover the cost, there could be the tendency to include everything and also other conditions, such as inclusionary housing or off-site infrastructure, this has to be balanced by the market capacity to support those higher densities. If those costs are higher than what can be sold in the market, it will not matter if you increase the density to pay for it, because there is no market for that extra area (Sorensen, 2007, p. 99).

There is the assumption that Land Readjustment needs a vibrant market to be implemented if the project needs to cover the costs of infrastructure and services (Sagalyn, 2007, p. 175). If the market is not vibrant it will not produce enough increase on the value of land to cover the costs. As previously explained, the value of land could be influenced by the market but the calculation of the cost recovery here is not based on that increase. It is based on the increase created by servicing the land that should be enough to cover the costs, even in slow markets it should be covering at least basic services. Markets can influence the decision to participate but not to condition the cost recovery characteristic within Land Readjustment.

The legal framework is another characteristic mentioned by Turk (2008) as one of the main characteristics of LR. First, it is argued that a national legal framework is needed for land readjustment to be implemented. LR need to intervene the property rights and if there is no such frame to do it, it will be against the law to take actions as expropriating reluctant owners. Second, it will set procedures and principles of LR for its implementation. These procedures are long and can prevent some countries from implementing Land Readjustment. Instead, cited cases like Bhutan, China or Ethiopia, have proved that LR can be implemented without a specific law, reliability on the participatory mechanisms, by convincing all landowners to join and use expropriation only as a threat. In countries like Turkey and India the existence of those laws even played against land readjustment, sometimes over regulation or changes in the bill by politicians can affect the results of the law in the practice of LR. That does not mean that the lack of a law is better. Useful regulations as explained by Hong (2007a, p. 18) is the constitutional provision of the social function of land, also equity laws like the right to access affordable housing will help to promote equity goals within the LR projects. It is important to emphasize that the role of the law is to allow negotiations in Land Readjustment to occur. Since the increase in the value of land is variable in each case, a fixed law that is imposed over all Land Readjustments limits the capacity of the projects to react to the needs of the area and conditions the cost recovery mechanism (Hong, 2007b, p. 188-189).

The sixth characteristic of LR described by Turk (2008) is the structure of land ownership. Since LR intervenes with the landowners' rights it is argued that those rights should be clearly defined either in terms of co-ownership or in settlers without legal tenure. This approach will exclude occupants that are not landowners. Renters and informal settlers will have no voice in this regulated environment, therefore, inequity and gentrification issues might arise easier. Acknowledging a greater gradient of tenure systems as proposed by Payne (2002, p. 8) will allow them to participate in Land Readjustment projects, like the cases of Land Sharing in Thailand or the swapping of land in the Indian case.

Another group of conditions is related to the planning system. It is recommended that LR is developed in a controlled size to have a manageable number of owners. However, as previously explained, the size is not controlled by the number of owners but by the capacity of the initiators to lead to agreements. Land Readjustments should be aligned with the statutory plan or help to update it so the projects contribute to a shared vision of the city.

The amount and capacity of the technical personnel needed to develop LR projects is also a characteristic of it, since it is considered that they should have deep knowledge about the legal framework and the real-estate market, as explained by Turk (2008). This is true for countries where the Readjustment is based on land value. In cases of countries where LR is based on the area of the plots, this characteristic becomes less important. Obviously having a good team of experts will of course always benefit the projects as seen in the Nepalese case. That team can gain experiences as the strategy of land readjustment is being implemented in the country. The more sophisticated the tool, the more capacity the implementers will need.

There is one last characteristic of LR described by Turk (2008) that relates to the cadastre system. It is argued that an updated cadaster should be available to determine the legal owners and the values of land. However, as shown by Rabé (2010), the starting point of the readjustment in land sharing projects acknowledges the existence of informal occupants of the land and includes them in the redevelopment projects. Legal owners do not have an incentive to update the value of land in the cadastre system, especially in this kind of situations where their land is being occupied, they also avoid high registration costs or long procedures to do it. Rather Land Readjustment projects are an opportunity to update cadasters and formalize tenure systems.

From all the characteristics explained here some have proved not to be a requirement to develop Land Readjustment projects, like the legal framework or a defined ownership structure. Even though those features are not required, they can foster more efficient Land Readjustment projects. Some other characteristics like the participation of landowners and the capacity to recover the costs are fundamentally differentiating Land Readjustment from any other tool and are critical for its implementation.

More than ever, participation is essential worldwide. Citizens become more active and demanding, citizenship is more informed and exercises their rights over the city and the participation in public policy related to cities.

The potential of Land Readjustment to recover the costs is a key element to finance urban development, especially in current contexts where around the world the resources to create better cities are not in the hands of the local governments.

2.2 Research Concepts

After the theoretical review, one of the main aspects highlighted was the focus on the governmental arrangements in Land Readjustment, which as explained in the problem statement, the lack of a specific regulatory frame for LR and the low capacity of

municipalities to implement this tool, has not triggered the whole potential of it. According to the theory a basic legal framework that establishes a constitutional provision of the social function of land is more than enough to implement LR. Moreover, the regulatory framework for Land Readjustment in Colombia gives parameters that can be measured across projects. Even though, there are problems with the implementation phase related to the role of local governments, this is true for any other tool or project, it will be important to evaluate those aspects that diminish the capacity of the state, since those are general conditions that are embed in the context, it will not affect the initial setting up of the tool but its implementation. Therefore, the research will concentrate on the other three aspects included in the problem statement: The possibility of coercion of landowners to participate in the Land Assembly, the low capacity to finance unprofitable uses and the equitable distribution of the benefits amongst all actors.

Table 2: Definition of the concept "voluntary participation of landowners"

Source	voluntary participation of landowners
(Doebele, 1982)	"Land Readjustment is simply a method by which the city government, other designated public bodies, or even private associations can participate directly in the process of urbanization and thereby share its profits."
Hong 2007	"Unlike in voluntary exchange or eminent domain, organizers of a land readjustment project reach out to the public at the very beginning of the project to engender broad political and community support. No shield companies are buying properties in the neighbourhood No condemnation notices are issued to residents."
Turk 2008	"Adoption and participation of landowners in the project will increase the applicability of LR." "the provision of a high level of support and participation by landowners is considered a fundamental point in managing the projects (Sorensen 2000a, 62, 63, 65)"
Hong & Tierney, 2014	"It is through LR that organizers can develop a participatory planning system, democratic decision-making processes, and community inclusiveness to make the proposed land swaps viable."
Hong & Cheng, 2014	"PILaR also stresses the importance of an open and inclusive participation of landowners and occupants in all decision-making processes."
In the context of this research, the voluntary participation of landowners is a direct inclusion of original owners in the decision-making process of Land Readjustment projects. Without buying out landowners. It is fundamental for the implementation of a LR project.	

Table 3: Definition of the concept "cost recovery tool"

Source	cost recovery tool
(Doebele, 1982)	"A similar calculation is then made of both the costs of installing the necessary infrastructure and of the probable total value of all lots when placed (with services) on the market. Comparison of these two figures produces the cost-equivalent rate, ..."
Hong 2007	"Land readjustment projects can be self-financing only if the responsible agency can resolve the inherent tradeoff between encouraging property owners' participation by reducing their land contributions to the project and recovering the full costs of local infrastructure by reserving more land for public uses and sale."
Turk 2008	"Land deduction is used for the acquisition of public service areas in the project area. In some countries' laws, the land defined as "cost-equivalent land" and allocated to be sold for the purpose of covering management and construction costs is included in the amount of reduction."
Hong & Tierney, 2014	"A key factor of PILaR is the possibility of raising funds to cover a portion of the infrastructure development costs."
Cost Recovery, as defined for this research, is the process of self-financing a Land Readjustment by valuating the initial plots of land and calculating the future value after the project, the difference should be used to reserve part of the land for allocation of services and infrastructure needed for the project, selling part of the land to pay for the installation of those services and the infrastructure and giving back to landowners the appreciated residual land distributed by the same proportion they contributed.	

Those three concepts were defined based on the theory developed by the different authors reviewed. First, the concept of 'voluntary participation of landowners' is supported in the definitions by Doebele (1982), Hong (2007), Turk (2008), Hong & Tierney (2014) and Hong & Cheng (2014), presented in Table 2, Second, The concept of 'cost recovery tool' was defined based on Doebele (1982), Hong (2007), Turk (2008) and Hong & Tierney (2014), as shown in Table 3. Finally, the concept of 'land value sharing' as defined by Smolka (2013), Alterman (2012) and Hong & Cheng (2014) displayed in Table 4. The definition of the research concepts supported in theory developed by those authors, created a solid theoretical framework, which tests if the interaction of stakeholders in LR projects, allows for a better distribution of the value of land amongst them and the community as a whole.

Table 4: Definition of the concept "Land Value Sharing"

Source	land value sharing
Smolka, 2013	"The notion of value capture is to mobilize for the benefit of the community at large some or all of the land value increments (unearned income or plusvalías) generated by actions other than the landowner's, such as public investments in infrastructure or administrative changes in land use norms and regulations."
Hong & Cheng, 2014	"land value is determined not only by its intrinsic value and private investment but also by public infrastructure development, regulatory changes, community actions, and general population and economic growth. In sharing land value, the value related to the original productivity or location of the land paid for by the owner and the increment generated by private land investment should remain in private hands. In contrast, public and private developers of infrastructure may obtain the land value increment created by their investments to defray a portion of the construction costs. In addition the government, acting as a representative of the public, may retain a portion of the increased land value due to regulatory changes and population and economic growth (Hong and Brubaker 2010, Ingram and Hong 2012)."
Alterman, 2012	"The same generator propels indirect and direct value capture – the increase in land values due to land use decisions."
Land Value Sharing, is defined in the context of this research as: mobilizing the increments in the value of land, created by the different stakeholders, to benefit the community as a whole and the stakeholders in an equitable distribution of cost and benefits.	

2.3 Theoretical Framework

Theory on Land Readjustment has shown here that the two constant characteristics are the participation of landowners and the capacity to recover the costs. Other characteristics vary depending on several factors and may or may not be part of specific LR projects.

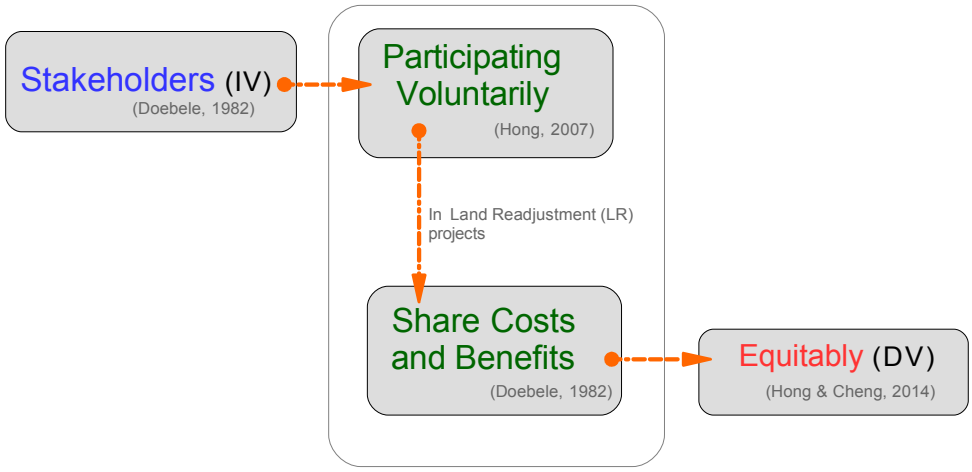
On the one hand, the participation of landowners, directly or indirectly, in Land Readjustment projects is a constant. There are other actors that also have gained participation, the local government by acquiring land (direct participation) or granting the permits (indirect), the community of occupants or tenants, developers, mediator bodies and others. All of them join voluntarily as a premise of Land Readjustment (LR) theory.

On the other hand, the various ways and formats Land Readjustment (LR) projects have capitalized the increase on the value of land, to cover partially or totally the costs of developing the projects, with or without including cost of infrastructure and services, moreover, generating equal benefits to all stakeholders. Is also a fundamental characteristic that distances LR from any other land assembly technic.

Therefore, the theoretical framework that will be tested in this research is: are this basic conditions, as defined here by several authors, being applied in the Land Readjustment projects in Colombia, within the enacted decrees that give each project viability. Moreover,

taking as the independent variable of this research the interactions between stakeholders, prove if the Land Readjustment projects in Colombia behave as theory indicates, in terms of including voluntarily the landowners and sharing the costs and benefits in an equitable manner. Understanding the equitable distribution of the benefits as the dependent variable.

Figure 3: Theoretical Framework



* (IV) = Independent Variable, (DV) = Dependent Variable

Chapter 3 : Research Design and Methods

In this section, the methodology applied in the research will be outlined. First, the operationalization of the theoretical framework into measurable indicators is explained. Second, the specific procedure of the research strategy is discussed, special attention is put into the detailed process of implementation, in order to be replicated on further researches, as part of a new sample or to diagnose the performance of LR in Colombia. Finally, an explanation of the data assumptions is presented, further detailed information about the assumptions can be found in annex 2.

3.1 Operationalization: Variables, Indicators

To address the research objective of testing the equity of stakeholders in LR projects in Colombia on Sharing the Value of Land, responding to the main research question stated in Chapter 1 namely, Are the stakeholders of enacted Land Readjustment (LR) projects in Colombia Sharing the Value of Land equitably? Variables and indicators were formulated based on the key concepts defined in Chapter 2.

As presented before, the main characteristics of Land Readjustment refer to the participation of landowners and the capacity of this land assembly method to share the costs and benefits. Therefore, those are the main concepts, presented here as the “voluntary participation of landowners”, the “cost recovery tool” and the “land value sharing”. These concepts, presented in Tables 2, 3 and 4, are taken from the definition that several authors have done about them, and then operationalized or make them measurable into variables, presented in Table 5. These variables are measured by indicators taken from Yilmaz, Çağdaş, et al. (2015), They presented a series of indicators elaborated specifically for Land Readjustment projects based on a review of the theories around LR. Some of the indicators are then rephrased to better fit the scope of this research, others (in quotation marks) are used as phrased by the authors (see Annex 1 for the comparison between Yilmaz, Çağdaş, et al. (2015) and the operationalized indicators).

3.2 Research Strategy

This research was developed with a mixed approach. First, a Survey Strategy that collected data from the projects' documents, since each LR project has a legal document that supports its implementation there is a standardized documentation to be reviewed. As defined by Van Thiel (2014), survey strategies are not only used to collect data from individuals but also from existing bodies of knowledge, in this case, the projects itself. She refers to this type of strategy as a “Desk Research”. Second, the strategy also included interviews with key informants who were involved in specific Land Readjustment (LR) projects, the objective of the interviews was to gather standard qualitative information across the sampled projects.

The main reason to use this strategy was because it allowed to collect standardized data from all the sampled projects. Therefore, it was possible to compare the results and discover patterns in the different LR projects. It allowed for the research to evaluate each project in terms of its stakeholders involvement and the cost recovery impact of the project as it was set up and approved. It did not measure the implementation process after the decree was enacted, therefore, the implementation issues and the governance capacity of the state (analysed in Chapter 1 as part of the problem statement) was isolated from the research, testing the theory of LR in the enacted projects, rather than evaluating its implementation phases.

Table 5: Variables and indicators

VARIABLES	INDICATORS	METHOD	INSTRUMENTS
voluntary participation of landowners			
participation of landowners is a direct inclusion of original owners in the decision-making process of Land Readjustment projects. Without buying out landowners. And is fundamental for the implementation of a LR project.			
direct inclusion	Are the landowners participating in the decision-making process? (y/n)	qualitative	interviews
		qualitative	experts interviews
	percentage of landowners participating	quantitative	document survey
	what it is the decision-making process like?	qualitative	interviews
	"The LR projects are explained in details to the landowners. (y/n)"	qualitative	interviews
	number of meetings hold with landowners	qualitative	interviews
	kind of decisions taken by the landowners	qualitative	interviews
	"It is possible for land ownership disputes to cause delays in projects? (y/n)"	qualitative	interviews
		qualitative	experts interviews
original landowners	is the property registry reflecting expropriation or compulsory acquisition before the project? (y/n)	quantitative	cadaster data
	Is the government a landowner? (y/n)	quantitative	document survey
	Is there any "measure for landowners to remain after the project? (y/n)"	qualitative	interviews
	where there transparency issues in the land registration history? (y/n)	qualitative	cadaster data
no buying out	"Is there any measure to reduce or prevent plot speculation? (y/n). If yes, list of the available measures"	qualitative	interviews
	"Is there any solution for landowners who want to leave the project? (y/n) If yes, list them."	qualitative	interviews
cost recovery tool			
Cost Recovery is the process of self-financing a Land Readjustment by valuating the initial plots of land and calculating the future value after the project, the difference should be used to reserve part of the land for allocation of services and infrastructure needed for the project, selling part of the land to pay for the installation of those services and the infrastructure and giving back to landowners the appreciated residual land distributed by the same proportion they contributed.			
valuation	is the project calculating the initial value of land? What is the percentage on it?	quantitative	document survey
		qualitative	interviews
	is the project calculating the final value of land? What is the percentage on it?	quantitative	document survey
		qualitative	interviews
costs included	is the cost of time included? What is the percentage on it?	quantitative	document survey
		qualitative	interviews
	Is the cost of land included? What is the percentage on it?	quantitative	document survey
		qualitative	interviews
	is the cost of land reserved for public use included? What is the percentage on it?	quantitative	document survey
		qualitative	interviews
	is the cost of on-site services and infrastructure included? What is the percentage on it?	quantitative	document survey
		qualitative	interviews
		quantitative	sectorial publications
	is the cost of off-site services and infrastructure included? What is the percentage on it?	quantitative	document survey
		qualitative	interviews
		quantitative	sectorial publications
	Are financial costs included? What is the percentage on it?	quantitative	document survey
		qualitative	interviews
	Are profits included as costs? What is the percentage on it?	quantitative	document survey
		qualitative	interviews
		qualitative	experts interviews
	Are the costs of building the project included? What is the percentage on it?	quantitative	document survey
		qualitative	interviews
		quantitative	sectorial publications
benefits included	Is the project receiving subsidies from the government? What is the percentage on it?	quantitative	document survey
		qualitative	interviews
	Is the project receiving extra development rights from the government? What is the percentage on it?	quantitative	document survey
		qualitative	interviews
land returned	Are the landowners receiving serviced land, development rights or payment at the end of the process?	qualitative	interviews
	Are the landowners getting all the benefits they are entitled to?	qualitative	interviews
	Are they selling land or rights to cover the development of the infrastructure and services?	qualitative	interviews
	Are they selling land or rights to cover the development of the project?	qualitative	interviews
land value sharing			
mobilizing the increments on the value of land created by the different stakeholders to benefit the community as a hole and the stakeholders in an equitable distribution of cost and benefits.			
mobilizing	Is the value being mobilized or paid out by some stakeholders?	qualitative	interviews
equitable distribution	is the increase in the value of land being distributed equitably amongst stakeholders? Percentage of value perceived by each stakeholder?	quantitative	document survey
		qualitative	interviews
	"Is there any assessment process for equality of landowners, how is the sharing of the costs and the profits?"	qualitative	interviews
		qualitative	experts interviews

3.3 Data Collection Methods

Aligned with the Survey Strategy selected, the main type of data collected was quantitative, target to measure the balance between costs and benefits in the LR projects in Colombia. Qualitative methods were used to triangulate information and to explain the differences in particular projects, which were related to specific contexts of each of them.

3.3.1 Quantitative Methods

To gather quantitative data the projects decrees were used. According to the legal framework set up for LR in Colombia by the 388 law of 1997 and its regulatory decrees, 2181 of 2006 and 4300 of 2007, Land Readjustment projects within Partial Plans have to fulfil specific requirements, that are authorized by decree for each one of the projects. This allowed the research to have an event that is fixed in time namely, the moment of approval of the decree, with a standardized set of parameters that have to be presented in any project all around the country. This set a standard benchmark for all projects to be measured isolated from different times and locations.

The decrees presented amongst other data, which landowners are the participants of the project and the amount of plots and area affected, also the financial strategy of the project, which includes the benefits received in terms of value for the FAR received and the costs of the whole project. With these data percentages of participating landowners and the weight of each cost and benefit were calculated and compared between several projects. Analysis was made on the weight and balance of these ratios. This data is consider primary data as referenced by Van Thiel (2014, p. 102) because it is raw data collected from the documents that have not been created with the intention to do research on it, simply to state what the project conditions are and fulfil the requirements of the law.

3.3.2 Qualitative Methods

Qualitative data was obtained using semi-structured questionnaires for interviews with key actors in the projects sampled. Those were used to explain in detail variables that could not be measured with the decrees, like the processes of expropriation or compulsory acquisition of land before the decree was enacted, or if the cost-benefit tool had another configuration before. It was important to have information that could validate or contradict theory or that could modify the results of the quantitative analysis.

The interview manual was based on the indicators from the theoretical framework, some of those indicators were measured also by the analysis of the content of the documents, in those cases the objective of the interviews was to triangulate the information from the decrees. In other cases the indicators were only measured in the interviews, those were targeted to explain particular situations found in the decrees, mainly if the participation process was voluntary and what kind of cost and benefits were included in each project that were not in others.

Interviews with experts in Land Readjustment in Colombia were also conducted, to gain general context and access to information. Even though, due to the timeframe and the availability of those experts, the interviews conducted were a few, they enriched the base of knowledge of the research.

3.4 Sample Size and Selection

From a universe of 157 projects that were documented in 2012 (Rodríguez, 2012) this research included the projects enacted until May 2015 at a national level. This was done by

gathering information from the municipal web pages and formal requests to the municipal offices. From the resulting number of projects a stratified random selection of projects was done to complete 30 projects to be measured, which is the minimum size for a quantitative measurement to be reliable considering that there was only one cell of research. The intention of a stratified sample was to have a proportioned representation of projects from the cities that have developed PP in Colombia. Because there are cities like Bogotá or Medellin that have produced significantly more projects than cities like Pasto or Cúcuta. The ratio of projects from cities that have one or two projects would be less than one, consequently, it might not be represented. As a consequence, the stratified sample included at least one project from each region to have a better representation of what the results are in a national level.

For the qualitative methods, a purposive sampling from the already random sampled projects was done in order to collect information from five projects, since that is the minimum number of respondents for a one cell research. Because of time and budget constraints, the interviews were conducted only in one city, with government officials that were in charge of each project, project managers from the private companies that initiated the projects and former employees that gave more of an informant point of view. It is important to highlight that there was no need to have different perspectives for each project since the objective was to compare projects between them. The sole objective to have different actors was to have more possibilities to conduct the interviews since some actors were sometimes harder to locate and agreed to be interviewed.

3.5 Validity and Reliability

Triangulation in the indicators, the sources and the methods were planned to increase the reliability and validity of the research. First, different indicators to measure the same variable were used. Second, the use of the decrees, databases and information from key actors as different sources of information. Finally, document analysis and interviews were used as different research methods. Therefore, accuracy and consistency was enhanced.

By using indicators taken not only from the literature reviewed by this research, also peer reviewed indicators from the article published by Yilmaz, Çağdaş, et al. (2015), afterwards the findings in literature were compared with the indicators in that article. A compiling list of indicators was done to verify that the internal validity of the research was increased.

The stratified random selection of projects guaranteed that representations of different cities and regions of the country were selected. Moreover, a review of the sample was done to ensure that projects with different characteristics are included, for instance, projects in new urban areas and also others in redevelopment areas. The sampling process backed up the research in terms of its capacity to generalize conclusions about the situation of the LR projects in Colombia.

To improve the reliability of the research, the selection of the main source of information was crucial. As explained before, the decree creates a standard measurement in time for all of the projects, the standardized requirements it has makes the measurement of the indicators accurate because those requirements are build to demonstrate that each project is complying with the law, which includes the principle of sharing the costs and benefits of the Land Readjustment. Therefore conducting research in other projects outside the sample or in the future, should provide similar results.

A pilot trial was conducted with one project outside the sample to test all the instruments used. This project was not included in the sample for transparency purposes. After the pilot,

the instruments were reviewed. The heterogeneity on the backgrounds of the interviewees built up on the representativeness of the study.

3.6 Data Analysis Methods

3.6.1 Quantitative Methods

The Data collected was highlighted in the project documents, this allowed to trace back all the information for reliability purposes. Once highlighted it was introduced into the template spreadsheet. The first sheet of the file contains the code book, with all the specifications on how to fill in each cell. Some of the cells are formulated according to theory, although they could be changed if the project documents specify that those assumptions are different for that particular project. The assumptions are explained in Table 6, and the code book is included in Annex 2 with the template spreadsheet. Once introduced all the information, the file was saved with the number of the project and the name "Data" separated by a hyphen sign (00-Data). Once all the data was gathered, it was transferred to a data matrix in a separate file for analysis.

Table 6: Data Assumptions

Data	Assumption
Voluntary Participation	All landowners that decide to participate should be the original landowners. There should not be buy-outs or shield companies acquiring land (Hong, 2007a, p. 14)
Receiving more valuable land	Landowners will be encouraged to participate in a LR if the land that they get back is more valuable than the land that they gave to be readjusted even though it is less land (Hong, 2007a, p. 23).
Receiving more valuable land (including Profit)	If the profits or losses are part of the benefits or costs that the landowners will receive or pay then their decision to participate can change.
Landowners benefits	The land after the area deducted plus the increase in the value of the land.
Public benefits	The land deducted for public use plus the on-site and off-site Infrastructure and services.
Developers benefits	The profits of the development.
Investors benefits	The revenue received according to the costs assumed
Non-LR Stakeholders benefits	The buildings for the buyers, the predevelopment and indirect costs for the contractors and the financial costs for the banking.
Landowners Contribution	The landowners are giving their land.
Public Contribution	The government is authorizing the increases in density, change of uses and regulations. Allowing the project to cover the costs of the infrastructure and services, the increase in the value of land, and the profits.
Developers Contribution	The developers are paying for the cost of time and the cost of the pre-development costs.
Investors Contribution	They are acquiring rights from the landowners, therefore, will be sharing with them their percentages.
Trust Contribution	The trust, if used is a mechanism that allows to cover several costs mainly the cost of building the project.
Equity Multiplier	It is a ratio that allows to balance the benefits received according to the contributions given.
Trust Equity Multiplier	Since the trust is not a stakeholder but a system that allows for the different actors to interact, its benefits should be distributed amongst the stakeholders equitably. Therefore, a Trust Equity Multiplier is used in a similar way as the Equity Multiplier.
Total Balance benefits	The benefits that each group of stakeholders should get according to their contributions
Difference	This indicates on what percentage each group of stakeholders is getting more or less than they should according to their contribution.

* Benefits and Contributions are based on (Maldonado, Pinilla, et al., 2006, p. 180)

First, the percentage of landowners participating in each project was calculated, since part of the requirements is for the document to inform which are the owners and the plots that would be included and which of those are voluntarily participating, the percentage of participation was obtained. Second, the increase in the value of land was also calculated on each project

and compared with the costs and the benefits of each project to reveal the percentage of each as a reason of the total increase on the value of the land, these was compared amongst projects to test the capacity of the Land Readjustment technic to be cost-recovery in different contexts. Finally, the percentages of each of the items in the projects were compared and trends in the cost-recovery tool were found. Furthermore the dependent variable of the main research question "equitable sharing of costs and benefits" was calculated as a ratio of the cost in the total budget and the benefits identically, to see if this balance was equitable.

A data inspection was done to detect errors in the matrix. For the percentile indicators, calculations included the mean value, the average, the standard deviation, the maximum values and the minimum values. This information gave an idea of the behaviour of each indicator, and the distribution of it amongst all projects. For the nominal variables, a chi-square test was used. An ANOVA test was conducted to see if the differences found in the benefits of each group of stakeholders was significant.

3.6.2 Qualitative Methods

The interviews were transcribed and then coded according to the interview manual (included in Annex 3), and the indicators. Each code was then analysed to find patterns between the different interviews, describing each indicator from a different source of information and comparing those results with the ones obtained from the quantitative method. From the sampled projects, one plot of land was selected randomly, then a cadaster certificate of those plots was acquired. The certificates were analysed and highlighted to review if the original landowner was the one participating. Comparing the dates of the enacted projects, with the date of purchase and sale of the plots of land, evidence was gathered to determine if, the original landowner was the one participating.

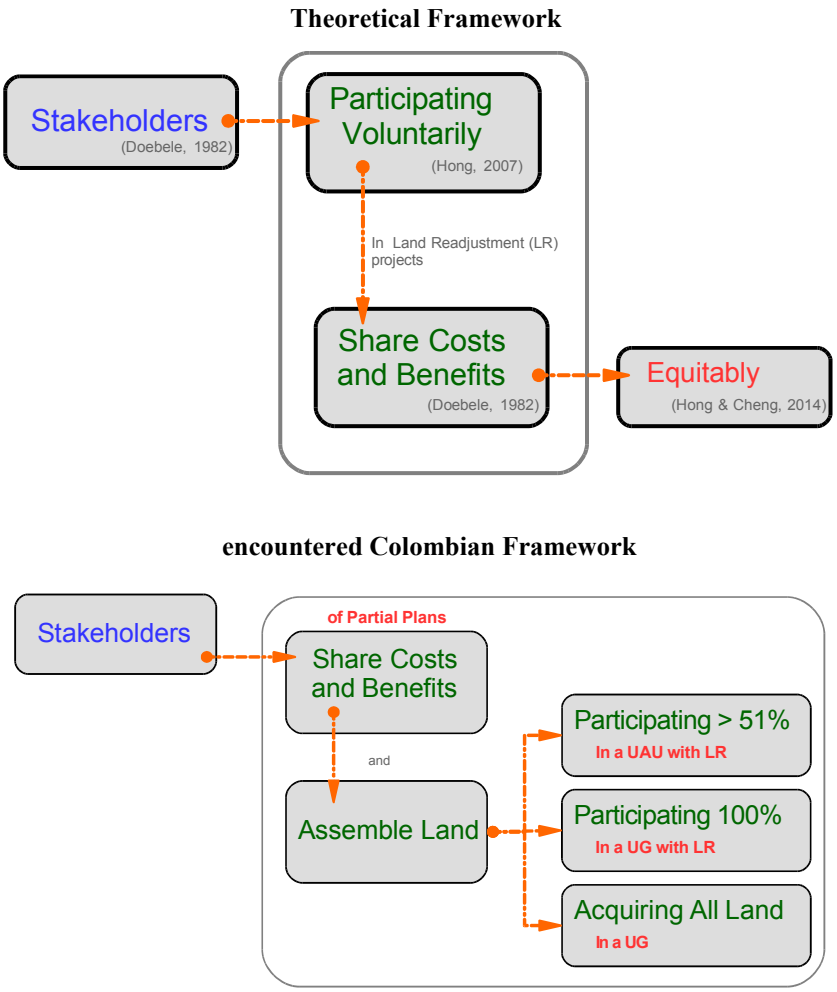
Chapter 4 : Research Findings

This section presents the results of the research. First, a comparison between the encountered Colombian legal framework and the theoretical framework is outlined. Second, the sampling process and results are described. Finally, the answers to the research questions are provided.

4.1 Land Readjustment Policy in Colombia

As previously explained, LR is framed by the law 388 of 1997 and regulated by the decrees 2181 of 2006 and 4300 of 2007 as stated by the Colombian Law. Within this framework, Land readjustment main characteristics has been separated; the Land Assembly method has been put within the Urban Action Units, and the Cost Recovery tool has been assigned to be implemented in the Partial Plans. Since the planning system in Colombia is hierarchical, as shown in figure 1, this separation implies that the cost recovery tool has also been located above the land assembly method. A Comparison of the encountered Colombian framework and the theoretical framework can give an overview on the implementation of the LR tool and the differences in its general setup.

Figure 4: LR encountered Colombian framework and Theoretical framework comparison.

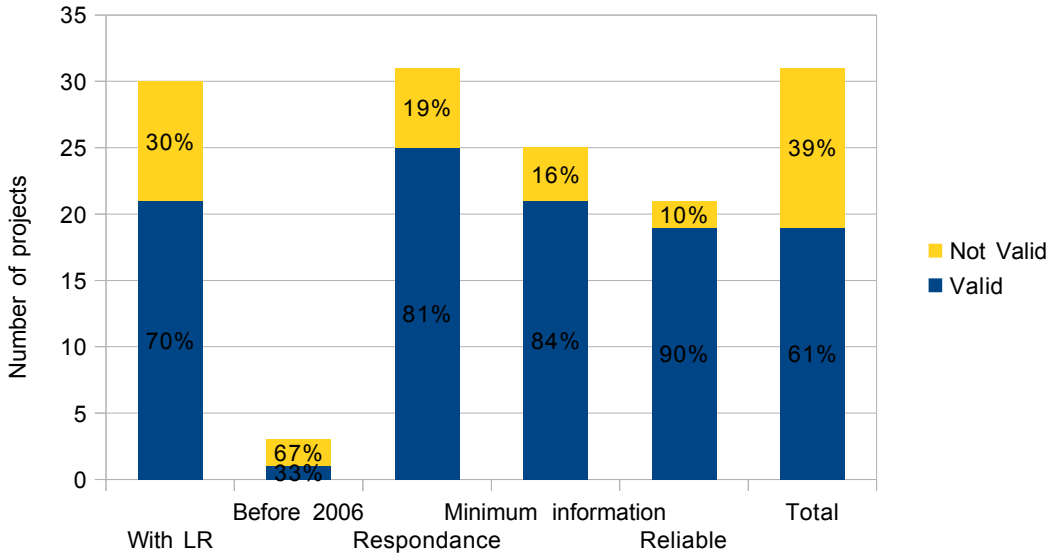


In Colombia, the landowners of the PP share the costs and benefits of the whole project. Even between different UAUs, the costs can be transferred from one UAU-UG to another, and therefore, there will be a transfer of benefits, in F.A.R.s, that match financially with the costs transferred. Since the land assembly tool of LR is used within each UAU-UG, this implies that between different Land Readjustments a transfer of costs and benefits can be done. It is not the same between different Partial Plans. That is why the Cost Recovery tool of LR is set up separately and hierarchically higher than the Land Assembly method. In PP land can be assembled with any of the technics presented in chapter 2: land banking can be done by public or private organizations. Expropriation is an option, however in the cases studied there was no expropriation registered. LR can be used either by the agreement of all of the landowners in the delimitated area, therefore denominated as a UG, with no need to legally define the area; or with the agreement of landowners that own at least 51% of the area, in this case a UAU needs to be regulated and enacted, in order to start the process of acquiring the remaining 49% of the area. This act becomes a tool to overcome the reluctance of landowners, it has several vehicles to fulfil the goal of the redevelopment, like compulsory acquisition or auctioning the land. However, from all the projects reviewed there is evidence of only one UAU enacted.

4.2 Projects Sampled

As shown in chart 1, out of the 30 sampled Partial Plans, 9 needed to be change because they did not have Land Readjustments in them, 7 of those were in the “development” treatment, the landowners of development Partial Plans appear to own big plots of land. It might be because large families own them collectively or perhaps there are other explanations. It clearly reflects Colombia's land ownership tradition, where land is owned by a few. Some of the sampled projects had more than one LR within. It was selected one on each Partial Plan. There was the possibility to include more LR from the same PP but the characteristics of UAUs in the same PP may not differ from each other, which could create a distortion in the representativeness of the sample. From the sampled projects that were enacted before the decree regulating the PP in 2006, all of them were updated afterwards. Just one had the necessary information to do the calculations after they had been updated. Before they were updated, none had enough information to be compared. This one was included in the main sample.

Chart 1: Projects Sampled



From the sample, 6 municipalities did not reply. A formal request was sent to each municipality for each of the projects, legally they have 15 working days to reply to these requests. After that period, telephone calls were made to the municipalities, which by that time, had not replied yet, some of those sent the information and some had to be reminded. A second formal request was sent to the remaining 6 municipalities, and several calls made, trying to acquire the information but most of those did not provide it, alleging different reasons.

Out of the 25 projects that sent the documentation, 4 did not have the minimum information needed, mostly related to the costs and benefits analysis and the budget of each of the LR. From the 21 that did have enough information, 2 were discarded, one because the landowners were members of the same company that was developing the project, and the other because the percentages of the cost had to be assumed in some of the values (the percentages of the profits, the construction, pre-development, financial, and indirect costs), creating high uncertainty on the overall distribution. As a consequence, the effective sample to conduct the research was 19 out of 31 Land Readjustments, which represents a response rate of 61 percent.

For the 5 interviews planned, due to time and budget constraints, five of the projects sampled in Bogotá were randomly selected to conduct the interviews. All of the interviews were conducted with the professionals in charge of the projects in the municipality, key actors from the developer side on those projects were also contacted, only 3 replied, one declined for company reasons, another could not attend the interview, finally only one interview was conducted from the developers' perspective. Four experts in PP were contacted, only two had the time to participate in the interview. Since it was planned to have a minimum of 5 interviews, having a larger sample gives more information to the research.

4.2.1 The sampling process

In order to acquire information about all the projects that were enacted in Colombia, a database was obtained from the National Planning Department – Departamento Nacional de Planeación DNP –. The database was reviewed, showing no records of projects enacted after 2010, therefore another source of information was used to triangulate the database; namely the official web pages from the 39 municipalities that the database reported had PP enacted or in process of approval. In this process, most of the projects where double-checked by consulting the websites. Some of those projects were in the database although their status was "in formulation", with the website review those were updated to "enacted". Some other projects were new and therefore included.

With this review, the number of projects enacted increased from 122 to 180 projects. As explained before, each PP could contain several UAU's. Each UAU can be developed with different types of LR, like redefining the boundaries or only collaboration between landowners. Also, a PP could be developed without LR as the land assembly method, using expropriation or compulsory acquisition. Therefore, the number of Land Readjustment projects does not necessarily correspond to the number of partial plans enacted, since some of the Partial Plans reviewed have several UAUs within, and some UAUs were not developed with LR.

From the list of 180 projects a random selection was made, taking into count two aspects: First, to follow the stratified sample criteria to have representativeness from all the national context and the different treatments. Second, to select projects enacted after 2006. Since the decree 2181 that standardised the requirements of the projects was enacted in that year, it was more likely to find the information needed in projects enacted after 2006. Three projects enacted before 2006 were selected additionally to the 30 random sample, to evaluate whether

or not those projects had the required information to conduct this research. The projects selected were enumerated from 01 to 33, being the last 3 the ones from before 2006.

In the database the number of projects enacted was added by city, then the proportion of projects was calculated from the total number of projects for each city. The sample of 30 projects was proportionally distributed based on this calculation. Then, to evaluate the representation of each region of the country, the number of projects that should be selected in each city were aggregated by region and balanced to match a regional representation. According to this stratification there should be selected 5 projects from Medellín, 2 from Envigado, 1 from Barranquilla, 8 from Bogotá, 1 from Popayán, 1 from Villavicencio, 1 from Cúcuta that was selected to balance the region, 4 from Pereira, 1 from Dosquebradas, 1 from Floridablanca, 1 from Ibague, 3 from Cali and 1 from Tuluá or Palmira also to balance the region. A table with the distribution of the sample is included in Annex 4.

The number of projects according to the type of treatments were also calculated. Out of 180 projects 114 were in development treatment, 48 in renovation, 11 in Consolidation, none in Conservation, 3 in Integral Improvement and 3 in mixed treatments. To maintain that distribution in a sample of 30 projects, 19 were selected in development treatment, 8 in renovation, 2 in Consolidation, none in Conservation, and 1 in Integral Improvement or in mixed treatments.

While reviewing the sampled projects, the first one showed the case where a PP does not include Land Readjustments, it was enacted less than 3 months after the decree 2181, and it shows an early version of UAU. Apparently, those units were not developed with Land Readjustments since they do not have a self-financing mechanism not even partially, those units depended entirely on funds outside the project not related to land. The only unit that assemblies land is the UGIS 2. Nevertheless, as stated in the article 16 of the decree, it will be by the acquisition of the land and not by sharing from the landowners. Therefore, the project cannot be considered as a LR project and another project from the ones listed, was selected. First, it was selected from the projects in the same category as the previous, integral improvement. None of the other two projects in that category were selectable, one because the decree was revoked, and the other because it had only one owner, therefore, is not considered a LR. Subsequently, a project in the mix treatments category was selected, two out of three cases were found selectable, the one selected was in a city that has more than one sampled project, therefore the sample can be adjusted if necessary. This happened to other sampled projects, hence, it was important to check if the projects sampled included LR so they could be taken into count.

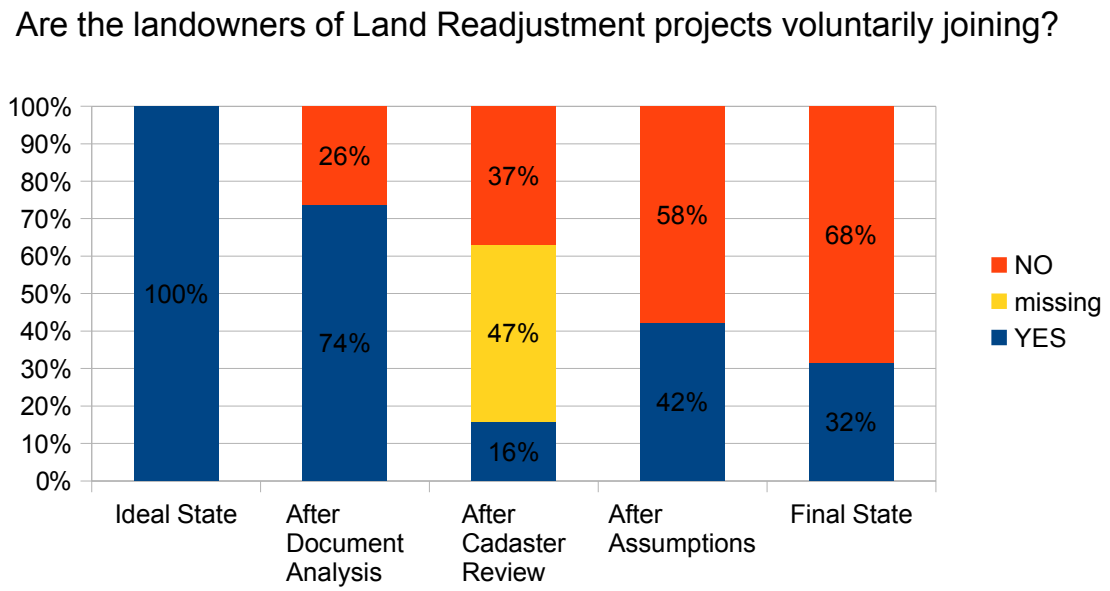
4.3 Findings of the study

The analysis of data collected from the documents and in the interviews will be presented here as a response to the research questions proposed. Each question will be explained and answer by using the available information. Then it will be contrasted with what Land Readjustment theory states.

4.3.1 Are the landowners of Land Readjustment projects voluntarily joining?

As a general rule, all projects state that they will motivate landowners to participate in the development of the project, as part of the associated management mechanism that the PP proposes. In this system, a management entity will be in charge of the general development of the project, including the participation of landowners, who can participate by contributing their land but also by covering the costs of development. However, as shown in chart 2, the voluntary participation fades away as the project makes its way.

Chart 2: Landowners voluntary participation



A common practice in Colombia is that developers start acquiring land in an early stage of the development of any construction project. In the case of LR is not different. 5 out of the 19 projects (26%), already stated in the documents that there were companies buying land in the area, most of the times are the developers or one of the landowners that is promoting the project. This was also cross-checked with the cadaster certificates, were in 7 out of 10 properties, the original landowners were bought out or were shield companies acquiring properties; It was not possible to obtain some of the certificates, either because there was not enough information to be requested, or in one case, the property was going under investigation, therefore the certificate was not available for the pubic. Similar results were obtained after applying the assumptions based on the theory, in 11 out of 19 projects at least one of the original landowners was bought out. To define the final estate of the voluntary participation, the results from the three sources were taken into account, If any of the sources proves that an original landowner was bought out, then the project is considered not to assemble land according to the land readjustment method.

With only 6 out of 19 projects (32%) assembling land according to the theory, a chi-square test was run to verify if this situation was representative for all the projects developed in Colombia, the test confirmed that the more information was gathered about the project, the more clear it became that landowners are not joining the projects voluntarily. In other words, the percentage of voluntary participation significantly differs by the stages of the projects (x4, (1, N = 86) = 26,33, p =.00). Only the cadaster review presented a count less than expected, this could be influenced by the number of missing data of cadaster certificates in the sample.

The interviewees reported that there exists a process to socialize the project, were there are meetings with the landowners and neighbours. In those meetings, the proposal is explained and questions are answered. This process of participation starts with the presentation of the proposal. Basically, any stakeholder can present the municipality a proposal. The municipality will evaluate the proposal and will, subsequently, bring specific experts from other public entities to evaluate the projects' viability. Afterwards, the municipality will convene all stakeholders for a public hearing about the project. It was explained by one interviewee that this process is not a requirement on a national level and that there is no standard procedure to do it. However, some municipalities do have a standard process. The interviewees said that there were reluctant landowners in some of the projects, in some cases

they were bought out, in other cases modifications were made in order to solve the dispute. in these cases there was no local government-owned land and the local government did not acquire any plot in the process. The projects could have processes of speculation as there are no ways to prevent it, the interviewees report that in some cases the value of the land increased after the decree. They also said that landowners are free to sell their land at any time. Even though, municipality officials reported that there is a new local law that protect landowners, it was enacted in 2014, after most of the projects and it is a local regulation. The participants of LR projects in Colombia are sometimes the developers and other investors, that acquire land from the original landowners, this creates a distortion between the roles of each stakeholder, its contributions, and the benefits that each should receive after the project completion.

The results found indicate that landowners are not voluntarily participating in the projects of LR, most of the participants are not original landowners who are buying-in their participation. According to the theory, the voluntary participation of landowners is the characteristic that allows for the cost recovery tool to be implemented, these results might have an effect in the balance between costs and benefits.

One important finding is that there are projects that are voluntarily joining the original landowners. From the sampled projects, 1 has shown in all the reviews that the original landowners are participating. This finding is important because it is an example that LR can be participative and inclusive, that LR as a land assembly method can be done with the participation of the original landowners and it is being implemented at least in one of the projects in Colombia.

4.3.2 What is the difference in the value of the land?

Land Readjustment projects in Colombia use the residual value method to calculate the value of land. In this process, from the total costs of the projects, different deductions are made to result on a residual value that is the appreciated value that can be paid to the landowners for their land. This research has reconstructed the process starting from the residual value of land, to test the theory that, at the end of the projects, landowners will receive a smaller plot of land but with a higher value, motivating them to participate. It also tested the capacity of Land Readjustments to mobilize the value of the land.

The interviewees explained how the process to calculate the final value of land is. They all agree that this calculation starts with the total revenues that the project is calculating to receive, from the sales of the FAR authorized, and then subtracting the costs of building the project, the cost of building the services and infrastructure, both on-site and off-site, the land reserved for public use, and the profits of the developers, discounting all the costs results in the value of land. Some of the interviewees also commented that in the projects appraisals are done to state the initial value of land, others consider that this process is not part of their role because it is not part of the legal regulations. This is a clear reflection of information that was found in the documents. Most of the documents clearly describe the procedure and values used to calculate the residual value of land. Some projects were not stating this information or other data, and therefore, those projects were not comparable or valid for the research. Also, some of the documents were specifying the appraisal process, some even included the appraisals reports, yet others did not have this information. Hence, the values were not listed and the data collected showed that there is no difference between the initial and final value of land.

The initial land values in the projects sampled start from USD$4 per square meter until USD$1,578, and can appreciate to a final value of land between USD$9 per square meter until USD$1,578, as presented in Table 7. On average the initial value of land of the projects sampled is USD$299 (SD=452) per square meter, and the final value of land is USD$342

(SD=448). Some projects did not state the initial value of land, therefore it was reported as equal to the final value of land. This is the case of project 05, which had the maximum value of land per square meter, reflected in Table 7. There is no relation between the values of land from the different projects, since the factors of endowment that each project have are different, not only between cities but also between locations in the same city. Each project has different characteristics that influence the value of the land, whether it is the locational factor, the current land use, or the newly authorized uses and FARs. Each project has different land values, and even within the projects each plot of land has different values per square meter, because the characteristics are unique, therefore, the value of the land, as seen in the appraisal reports of some of the projects varies, as a reflexion of those factors and the land market behaviour.

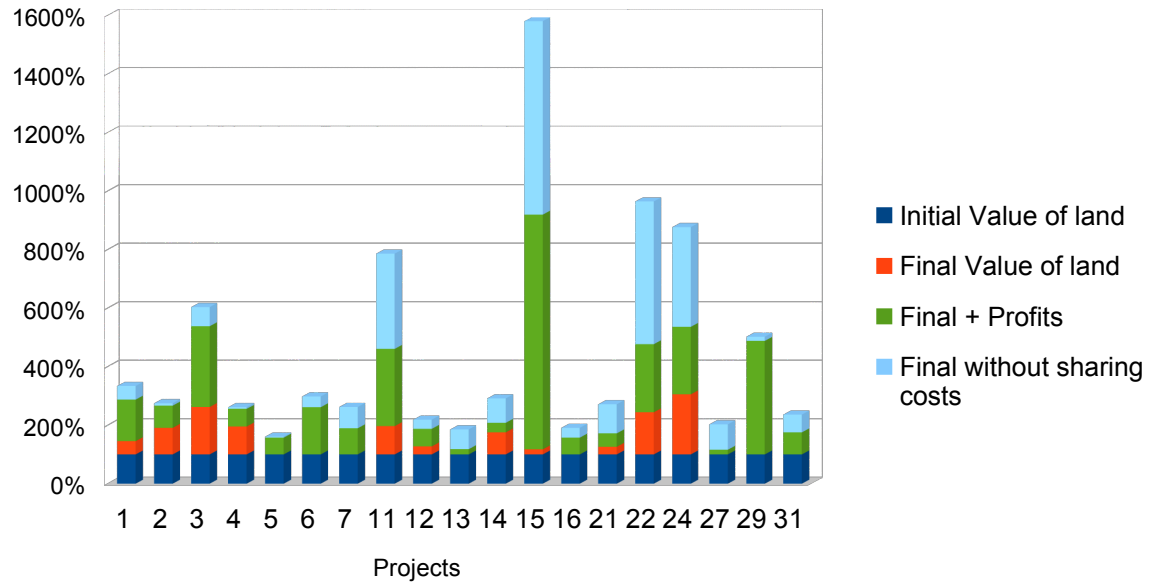
Table 7: Increment in the value of land – Currency Data/m²

Value of land	Mean	Median	Std. Deviation	Minimum	Maximum
Initial Value COP	$728,715	$194,734	$1,102,746	$9,271	$3,847,000**
Final Value COP	$832,425	$407,913	$1,091,975	$22,593	$3,847,000
Initial Value USD	$299	$80	$452	$4	$1,578**
Final Value USD	$342	$167	$448	$9	$1,578

* All values are adjusted to may/2015 (1US Dollar = 2,438 Colombian Pesos)
** The project 05 did not state the initial value of land.

Since the value of the land is not comparable between projects, it is necessary to use the percentages that the value has increased in each of the projects, to be able to compare the increase in the value of the land amongst them. In Chart 3 the distribution of the increment in the value of land can be appreciated, all of the projects have an initial value of land (100%), some projects increment the value of the land to give a benefit for the landowners, the final value of land. There are projects that gave a benefit to the developers, the profit. Some gave a smaller percentage to the developers than the value of land, whereas others gave more. In some cases they offer several times more the initial value of land. All of the projects are covering the costs of providing the services and infrastructure and the land deducted for public space.

Chart 3: Increment in the value of Land (%)



In Table 8 it can be observed that land has increased its value up to 1,479 percent to cover the costs of on-site and off-site services, leaving positive financial benefits to the stakeholders. On average, the total amount that land has appreciated in order to cover all the costs was 447 percent (SD=367.97), the project where land increased its value the least, it did by 61 percent (data in table 8 reflects the values with the initial 100 percent included). This information helps to support an important aspect of project development: the dilemma to cover the projects' infrastructure costs. Some stakeholders argue that it is not possible to cover those costs because if it were to happen, the cost would be transferred to the buyers at the end of the day. The data found in this research helps to support the statement that those costs will be covered by the land, specially because in the case of LR projects, the possibility of authorising extra FARs as part of the Cost-Recovery tool, will support the cost of the infrastructure and services only up to the point where the market allows it. As shown in project 15, it was possible to cover the construction of a BRT station, a parking lot and a metro station by increasing the FARs that the project had, also because the demand for office spaces in the area, where the project is located, was high.

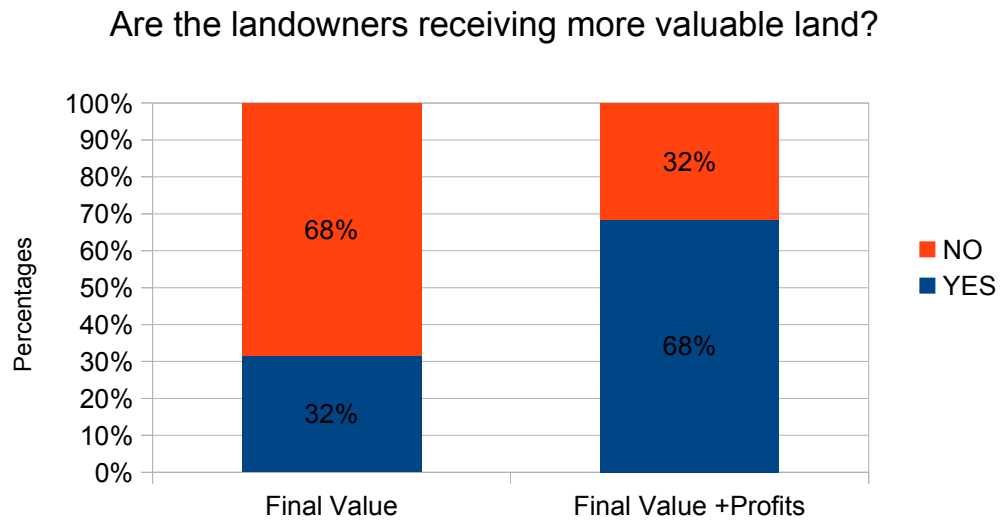
Table 8: Increment in the value of land – Percentile Data

Increment in the value of land	Mean	Median	Std. Deviation	Minimum	Maximum
Initial Value of Land	100	100	0.00	100	100
Final Value of Land	152	126	64.12	100	305
Final Value of land Including Profits	314	255	205.64	116	919
Value of land without sharing the costs	447	275	367.97	161	1579

* Values in percentages (%)

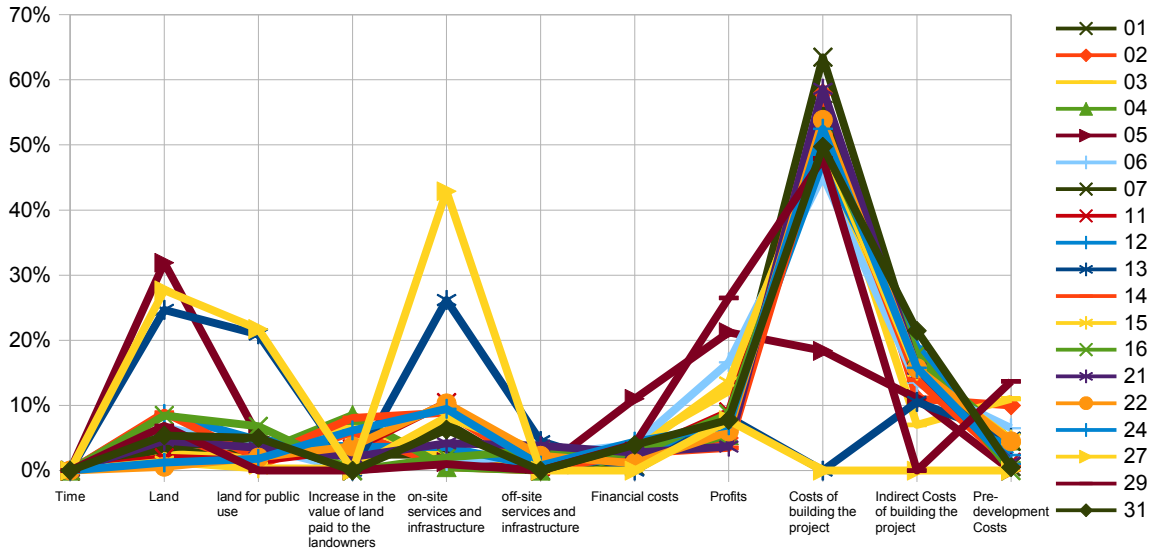
To test the theory that landowners will receive more valuable land after the Readjustment but in a smaller plot, the value of the resulting area after deductions was calculated and compared to the initial value of land. It was calculated by multiplying the net area by the final value of land. Afterwards a second calculation was made including the profits of the project in the final value of land. The reason for this is based on the assumption that all project-related profits or costs should be distributed or paid by the landowners. If the result is higher than the initial value of land, it indicates that the landowners will receive more than what they have initially contributed. Therefore, they will be motivated to participate. As seen in Chart 4, most of the projects (68%) will return to the landowners less value for their land contributions, in the original scenario where landowners do not share the developers profit. When the value is calculated, including the profit, the situation was the opposite. Only 32 percent of the landowners will receive less valuable land and the majority of the projects (68%), theoretically speaking, would return more value to the landowners (see Chart 4). The mean scores of the increment in the value of the land were compared with a one-way ANOVA test. There was a statistically significant difference between the values of land (F (3,72) = 10,45, p =.00). A Turkey post-hoc test also revealed that, even though, the difference between the initial value of land and the final value, including profits, was statistically significantly lower (314 ± 206%, p =.015). There was no statistical difference between the initial value of land and the final value of land (p = .877). This difference could be caused by the fact that, some of the projects did not state an initial value of land, a test was run excluding those values with similar results, (F (3,65) = 8,23, p =.00) and (p = .924) between the initial and the final value of land. Since the difference between the initial value of land and the final value of land is not significant the landowners might not be motivated to participate in the LR projects.

Chart 4: Increment in the value of Land – Motivation to participate



4.3.3 How are the cost and benefits included in the calculated budget?

Chart 5: Costs distribution



The costs of LR projects, as seen in Chart 5, has a similar pattern amongst most of the projects. The ones that differ, do not include the costs of constructing the buildings (projects 13 and 27); or the costs of constructing the buildings is low, in the case of project 05, because a large part of the FAR are part of an existing building, which will remain and will be upgraded. In Table 9, the behaviour of each of the variables can be observed. Most of the costs have an average below 10 percent, only the costs of constructing the buildings and the pre-development costs have a mean higher that 10 percent (45% and 13% respectively). Most of the projects do not include one or more of the items, therefore, most of the minimums are zero percent, except for the land, the on-site costs and the profits, which is the highest minimum (3%); there is also a negative minimum that corresponds to the cost of off-site

services and infrastructure of project 07, because the project is transferring those costs to another UAU, and therefore, receiving fewer benefits.

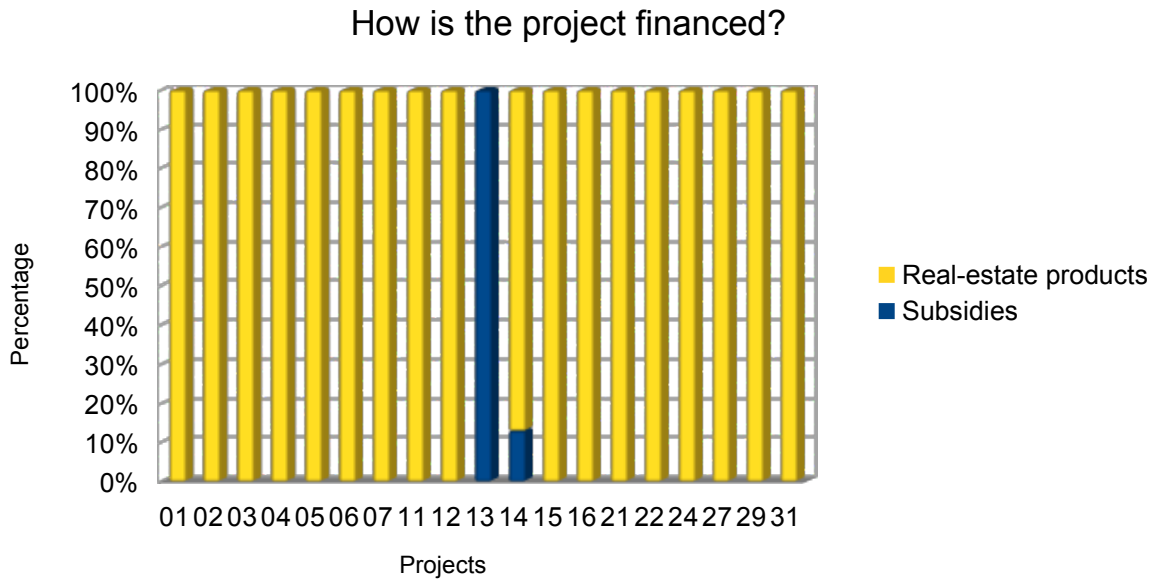
Table 9: Costs distribution – Percentile Data

Costs	Mean	Median	Std. Deviation	Minimum	Maximum
Cost of Time	0.00	0.00	0.00	0.00	0.00
Cost of Land	8.47	6.00	9.28	1.00	32.00
Cost of land reserved for public use	4.84	3.00	6.17	0.00	22.00
Increase in the value of land paid to the landowners	2.68	2.00	3.15	0.00	9.00
Cost of on-site services and infrastructure	7.74	4.00	10.40	1.00	43.00
Cost of off-site services and infrastructure	1.16	1.00	1.61	-1.00	5.00
Financial costs	3.00	3.00	2.33	0.00	11.00
Profits	9.84	8.00	6.08	3.00	27.00
Costs of building the project	45.16	51.00	18.24	0.00	63.00
Indirect Costs of building the project	13.42	15.00	5.74	0.00	21.00
Predevelopment Costs	3.84	2.00	4.15	0.00	14.00

* Values are in percentages (%)

As shown in Chart 6, most of the projects are self-financed by the real-estate products, which will be sold. This is possible specially because in Colombia, the most common practice to develop projects is by using a trust, that will allow interactions between stakeholders, and ease the burden of the costs, by selling the real-estate products up front. Only two of the projects include subsidies, one is a fully subsidize project from the government oriented to build social housing, the other is the main landowner that is also the developer and wants to keep area for its own use.

Chart 6: financial benefits



4.3.3.1 Cost of Time

The cost of time is not directly included directly in the cost distribution. Most of the interviewees reply that it is not included in the budget, some argue that the developers might include it as part of their calculations. However, in the documents that the developers presented to the municipalities it is not contemplated. Some interviews showed that the model presented in the documents is a static model, therefore, it does not show the value of time.

Only the interview with the expert in financial models revealed that, normally a developer will run dynamic models for the projects but present a static one for the municipalities. Therefore, the value of time might be included in the calculations already. However, as explained by the expert, this might not be a practice that all developers use.

4.3.3.2 Cost of Land

According to the interviewees, the cost of land is included as a contribution, not directly as a cost, the developers that buy land should be including it as a cost within their calculations. However, the municipality understands land as a contribution. The average cost of land is 8.47 percent (SD=9.28). It can vary as explained before, by the characteristics of the plots of land.

4.3.3.3 Cost of land reserved for public use

Only one of the projects did not reserve land for public use, this might be because they are paying out the obligations, or because they are transferring it to another UAU but it was not shown in the documents. The average cost of land reserved for public use is 4.84 percent (SD=6.17). In most of the sampled projects, the value of public land accounts for less than 10 percent, except for the ones that do not include the value of constructing the buildings.

4.3.3.4 Increase in the value of land paid to the landowners

The increase in the value of land has one of the lowest averages 2.68 percent (SD=3.15), the maximum value for this indicator is 9 percent. This coincides with the results found for subquestion two, stating that there is no significant difference between the initial, and the final value of land.

4.3.3.5 Cost of on-site and off-site services and infrastructure

The costs of services and infrastructure as observed in the interviews, is calculated based on the technical concepts that the different entities of the state give, each entity is in charge of an specific aspect of the municipality, and therefore has to be consulted in the process of the projects, first to ask them to list the determinants that the projects should fulfil in the specificity of each entity, and after to review if the project is complying with the concept. For example, the environmental agency should give the requirements that the projects have to fulfil in terms of area to be preserved for environmental purposes, or if a body of water needs to be intervened. All this requirements are either developed inside of the area to be readjusted, like local roads, local parks or police stations, as the projects sampled did; or outside of it, like the BRT station or a sectorial park. These costs were calculated with technical budgets that the developers submitted as part of the information of the projects, and then verify by the municipality.

All of the projects had on-site services or infrastructure, which needed to be cover besides the land that was reserved for public use, the average of the on-site costs was low (M=7.74, SD=10.40), considering that the projects that did not cover the costs of buildings had a high percentage of on-site costs (26% and 43%). The off-site costs of the projects sampled were proportionally low compared to the rest of the costs (M=1.16, SD=1.61), specifically because some of the projects do not cover any off-site cost or they transfer those to other UAUs.

4.3.3.6 Financial costs

Most of the financial costs are cover by the trust system since the projects are pre-sold before any building construction phase starts. The interviewees do not give much attention on how the projects will be financed, they are concentrated in the technical requirements, it is the developers mission to find the resources to develop the projects, and therefore this percentage is part of the model but not a determinant one. On average the financial costs account for 3 percent (SD=2.33) of the total costs of the project, most of then show a similar behaviour except for the project 05 that sets the maximum value (11%).

4.3.3.7 Profits

It is important to highlight that during this research the profits have been counted together with the costs, from an accounting perspective, the costs plus the profits are equal to the benefits. Theoretically all profits should go to the landowners. However, as the interviews and the documents revealed, the surplus is captured by the developers; the profits are assigned to the developers, and the profits for the landowners is the increase in the value of the land. The average value for the sampled projects is close to 10 percent (M=9.84, SD=6.08), with the minimum value being the highest amongst minimums (3%) and the maximum value 27 percent.

4.3.3.8 Costs of building the project

The cost of construction of the buildings has the highest percentage amongst all the costs (M=45.16, SD=18.24), as explained before there are three projects that presented a low or no value, because those projects do not build, either they return or sell land or, in one case, part of the buildings are already there and the project will only upgrade those buildings. The indirect costs of building the projects are costs associated with the building process, in the quantitative exercise they were separated, because these costs can be cover and benefiting different stakeholders. Indirect costs account in average for 13.42 percent (SD=5.74) of the total costs of the project. Since some projects do not cover the construction costs, the indirect costs can also be zero. In the sampled projects, the maximum percentage for the indirect costs was 21per cent. Pre-development costs are also associated with the construction process, these costs are normally cover by the developers and include the studies that are needed to develop the project, some costs of initiation and, in some cases, some construction costs. The average value for pre-development costs is significantly low (M=3.84, SD=4.15), compare to the other associated costs.

4.3.3.9 Subsidies and Development rights

As explain before, the setup of most of the projects has the goal to use the Cost-Recovery tool of LR to its fullest, therefore the projects rarely depend on subsidies from the government, even though, the state is subsidizing the demand of social housing, it does not directly affect, nor it modifies the projected budgets. The main source of revenue is the projected deal of real-estate properties, in this sense, the interviewees recognized that, since the projects are covering costs of infrastructure and services, they are receiving extra FAR to break even with the costs, FAR that otherwise, would not be able to reach since the land use plan for those areas did not allow it.

4.3.3.10 Land returned

The adjustments, as theory defines them, are the benefits that landowners receive after the project completion. In the projects sampled they can be given in any of the possible ways: serviced land, development rights or payment. Most of the projects leave open these options to the negotiation between stakeholders. All the projects always reviewed the balance between landowners, what each landowner contributed and what they received. If a landowner is receiving more than what it contributed, those extra benefits will be passed on to the landowner that contributed more and received less. This assessment is only between landowners, does not include the other stakeholders. The costs of the projects are covered by the landowners, or the investors in the trust, and the trusts redistributes the benefits at the end, as explained before, the line between a stakeholder role is diffuse, due to the fact that original landowners are being bought out, and therefore, the new landowners behave like investors or developers.

To conclude, the costs and benefits are included in the projects' budgets in a similar way amongst the sampled projects. Some projects reflect specific conditions that are dissimilar, however, those conditions are contemplated as part of the possibilities that theory has

encountered. The interviews confirmed the data found in the documents, with a particular disagreement in the way that time is included in the costs.

Table 10: Costs distribution – Analysis

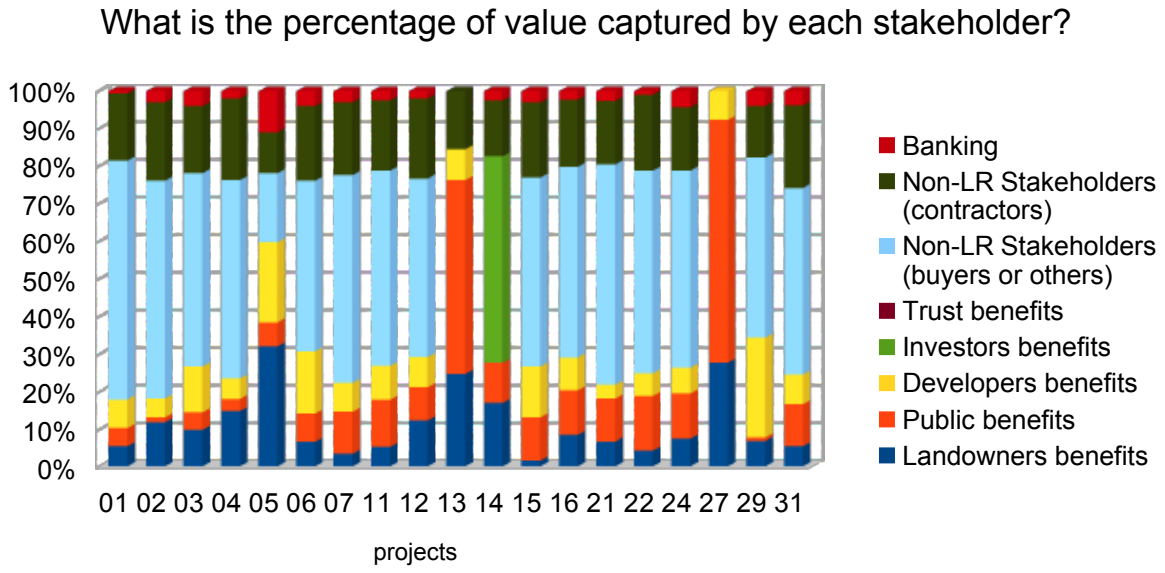
Costs	Included	Behaviour	Interviewees	Theory
Cost of Time	N o	Similar	Disagree	Contrary
Cost of Land	Yes*	Similar*	Agree	Agree
Cost of land reserved for public use	Yes*	Similar	Agree	Agree*
Increase in the value of land paid to the landowners	Yes*	Similar	Agree	Agree
Cost of on-site services and infrastructure	Yes	Similar*	Agree	Agree
Cost of off-site services and infrastructure	Yes*	Similar	Agree	Agree*
Financial costs	Yes*	Similar	Indifferent	Agree
Profits	Yes	Similar	Agree	Contrary
Costs of building the project	Yes*	Similar*	Agree	Agree
Indirect Costs of building the project	Yes*	Similar*	Agree	Agree
Predevelopment Costs	Yes*	Similar	Agree	Agree
Subsidies and Development Rights	No*	Similar*	Agree	Agree
Land Returned	Yes*	Similar*	Agree	Contrary

* With exceptions

4.3.4 What is the percentage of value captured by each stakeholder?

As reported by the interviewees, there are two ways to share the value of the land, one, by mobilizing the increase on the value of the land, supplying land for public use and paying for the on-site and off-site infrastructure and services, and second, by capturing it with the plus-value tax, in the municipalities that do implement it. This tax is calculated by the cadastre system or the unit in charge of it and paid by the projects to the state. There is no assessment process to verify that there is an equitable distribution after the decree is enacted. What the municipalities take care of is that the costs that the project has to cover, are covered in the document, and therefore, the developers should comply with the law, in the terms of the decree.

Chart 7: benefits per actor



According to the assumptions in Table 6 (Chapter 3, 3.6.1), the costs were assigned to each of the actors that play a specific role in the LR process, some of those actors are not stakeholders, because they do not have participation in the adjustments, their interaction is made possible because of the trust that projects use to manage the procedures. As shown in Chart 7, the percentages that each group of actors receive across the projects is similar, except for the projects that do not include the costs of the buildings (projects 13 and 27), the project that includes part of the building costs (project 05) and the project in which the investor/landowner will use the building for its own (project 14). It can also be seen that most of the benefits are ultimately captured by the buyers of the real-estate products since they are the final buyer and financier of the projects.

Table 11 shows the benefits distribution data. Landowners receiving the value of the land appreciated, are capturing on average 11 percent (SD=8.68) of the total benefits, they always participate in the benefits with a minimum of 2 percent (project 15) and a maximum of 32 percent in project 05. The public will benefit from the land for public spaces and the infrastructure and services provided by the projects, they receive in average 14 percent (SD=16.43) of the benefits with a minimum of 1 percent in projects 02 and 29 (due to decimal calculation these values are equal), a maximum of 65 percent is reported in project 27. Developers are capturing the profits of the projects (M=9.68, SD=6.30), the project where the developer does not capture any value is the same where the developer is also the investor and a landowner, the maximum benefit a developer receives is in project 27, where the public was receiving the minimum percentage of benefits. There is only one project where investors receive benefits (project 14). The trust, as explained before, is not an actor, therefore it does not receive benefits at the end of the process, the trust redistributes the benefits created amongst all stakeholders, it is listed in table 11 because It fulfils a fundamental role in the process of benefits distribution. The buyers of the projects are receiving in average 42 percent (SD=20.89) of the benefits in the form of the actual buildings, the projects that do not include the buildings set the minimum (0%), as those projects do not sell real-estate products, the maximum benefit to buyers is given in project 01 (63%). Contractors are receiving on average 17 percent (SD=5.07) of the benefits, and the financiers of the projects either a banking system or any other system that each project uses, are receiving in average 3 percent (SD=2.33) of the total benefits.

Table 11: Benefits distribution – Percentile Data

Stakeholders	Mean	Median	Std. Deviation	Minimum	Maximum
Landowners benefits	11.11	7.00	8.68	2.00	32.00
Public benefits	13.74	11.00	16.43	1.00	65.00
Developers benefits	9.68	8.00	6.30	0.00	27.00
Investors benefits	2.89	0.00	12.62	0.00	55.00
Trust benefits	0.00	0.00	0.00	0.00	0.00
Non LR Stakeholders (buyers or others)	42.47	51.00	20.89	0.00	63.00
Non LR Stakeholders (contractors)	17.32	18.00	5.07	0.00	22.00
Banking	3.00	3.00	2.33	0.00	11.00

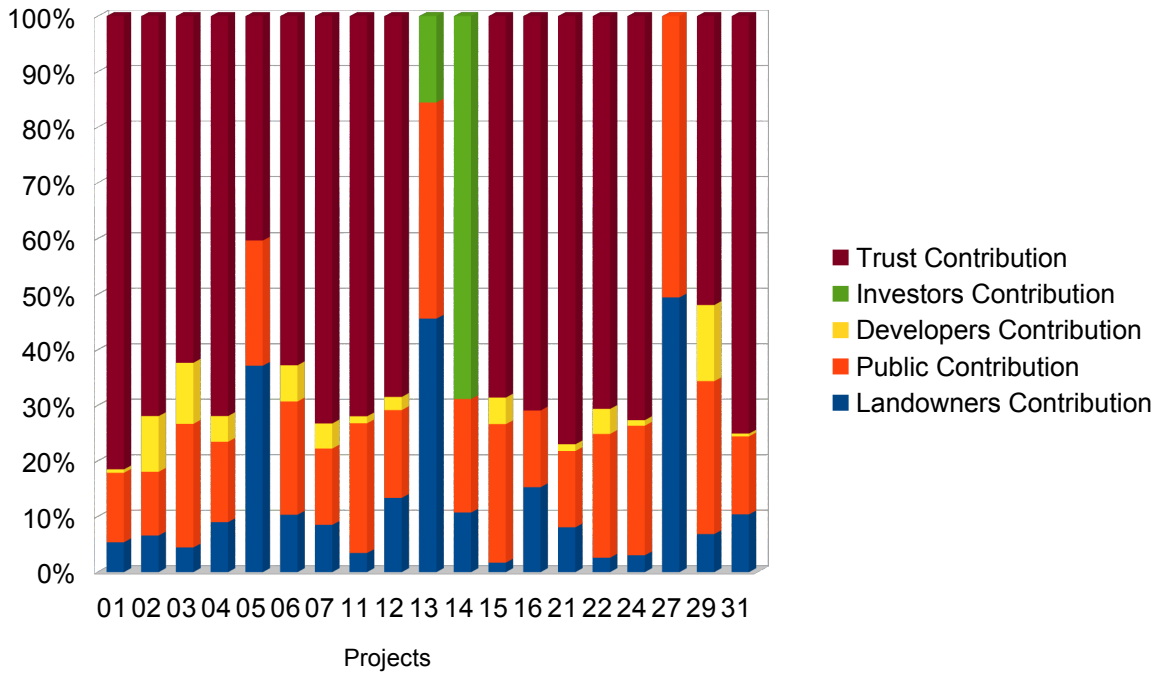
* Values are in percentages (%)

4.3.5 Are the stakeholders of enacted Land Readjustment (LR) projects in Colombia Sharing the Value of Land equitably?

To answer the main research question, the data obtained from the projects was computed, following the assumptions in Table 6. With the values obtained basic analysis was done, describing the behaviour of each of the groups of stakeholders, first with the contributions

that each group of stakeholders had, then with the benefits that each group of stakeholder should receive, and finally, comparing with the benefits that the stakeholders received. In theory the comparison of the benefits that received and the projected benefits that should receive must be the same, therefore, if a subtraction was made, the residual value should be zero. In most of the cases, there was a difference between the values, meaning that the distribution of benefits was not equitable. Subsequently, a one-way ANOVA test was conducted to verify if those differences were statistically significant, therefore the results found on the sample can be significant for the total LR projects enacted in Colombia. The procedures and findings to this question are described as follow.

Chart 8: Contributions per stakeholders



The contributions that each group of stakeholders did to the projects was calculated by taking all the costs and adding them according to the assumptions, and assigning those added values to the corresponding stakeholder. Then those values were verified, checking that they all account for the 100 percent of the costs (Chart 8). Afterwards, descriptive statistics were calculated using SPSS, the results are presented in Table 12. The contributions were done by the landowners, the public, the developers, the investors and the trusts. The landowners, contributed their land, which in average accounts for the 13 percent (SD=14.32) of the total costs, the project were landowners contributed the least was project 15 (2%), the projects that proportionally contributed the most are the ones that do not include construction costs, projects 27 (49%) and project 13 (46%), followed by project 05 (37%), which land value included buildings that were going to be upgraded. The public, understood as the municipality, by increasing the FAR of the projects allowed for the services and infrastructure to take place, and with the permit also increased the value of the land and allowed for the project to leave a marginal value to be profitable. The average contribution of the public was 21 percent (SD=9.79), with a minimum contribution of 11 percent, and a maximum of 51 percent in project 27, that correspond entirely to the profit of the project.

Table 12: Contributions distribution – Percentile Data

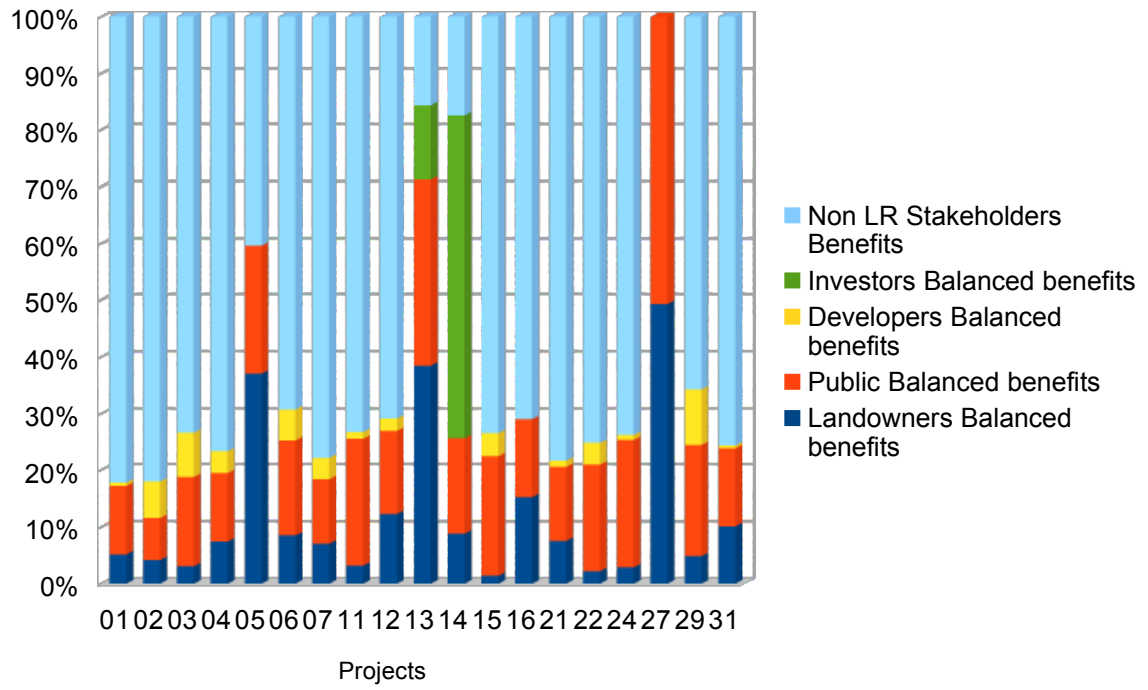
Stakeholders	Mean	Median	Std. Deviation	Minimum	Maximum
Landowners Contribution	13.16	8.00	14.32	2.00	49.00
Public Contribution	21.32	20.00	9.79	11.00	51.00
Developers Contribution	3.53	1.00	4.27	0.00	14.00
Investors Contribution	4.47	0.00	16.05	0.00	69.00
Trust Contribution	57.53	71.00	27.22	0.00	82.00

* Values are in percentages (%)

The contribution of the developers is the predevelopment costs and the costs of time. Since the projects presented a static model, the cost of time is zero percent in all of the projects. This value, as explained before, if calculated would be distributed in all of the costs, therefore, shared by all stakeholders. The average contribution of the developers was the lowest of all (M=3.53, SD=4.27), with a maximum contribution on project 27, were the developer cover part of the construction costs. The minimum is found in project 16, where the developer did not have a contribution. This value is caused because the documents do not assign any value to the pre-development costs, which does not mean that the developer did not contribute. Since the developer was also a landowner, a distortion of the model can be observed; as the developer could be contributing as a landowner instead of doing it as a developer. Investors are observed in two of the projects with an average contribution of 4 percent (SD=16.05). The investors in the model do not have an assigned contribution, in these two cases, investors are also landowners and developers, that are subsidizing the projects. The trust contribution has the highest of all contributions (M=57.53, SD=27.22). As explained before, the trust is not an actor but a system, that allows the LR projects to self-finance the direct and indirect costs of the buildings, and the financial costs, in this sense, it can be as low as the minimum of the sample (0%), when there are no construction costs and direct investment or subsidies, or as high as 82 percent, when most of the project is financed with the projected sales, as in project 01.

To calculate the balanced benefits, the benefits that each group of stakeholders should receive at the end, according to their contributions; an equity multiplier was used. This multiplier takes the total percentage of benefits received by the stakeholders, excluding the actors that are not stakeholders, and divides it by the sum of all stakeholders contributions. The multiplier is a constant that, multiplied by each stakeholders contribution will result in the balanced benefits for each. As explained the trusts benefits need to be equitably distributed between stakeholders, because the trust itself is not a stakeholder but the result of the interactions between stakeholders, therefore, a similar equity multiplier, called Trust Equity Multiplier, is used. The Trust Equity Multiplier takes the balanced benefits of the trust and divides it between the sum of all stakeholders contribution, excluding the trust, and the actors that are not stakeholders, this constant value, is then multiplied to the contribution of each stakeholder, to find the percentage of the benefits that each stakeholder should receive for its interaction in the trust. The balanced benefits and the trusts balanced benefits of each stakeholder then are added to find the final balanced benefits for each group of stakeholders. The sum of all balanced benefits should be equal to the sum of all received benefits. Since the benefits of the non-LR stakeholders were not balanced, they stay constant. Therefore, if the stakeholders total balanced benefits are added with the non-LR stakeholders benefits, it should be equal to one hundred percent (100%).

Chart 9: Balanced Benefits per stakeholders



Once obtained the balanced benefits of each stakeholder in each project, descriptive statistics were calculated to have an overview of the behaviour of these variables (Table 13). Landowners should receive on average 12 percent (SD=13.71) of the benefits, with a minimum in project 15 (1%) and a maximum in project 27 (49%). The public should receive on average 19% (SD=9.67) of the total benefits, with a minimum of 7 percent in project 02, and a maximum of 51 percent in project 27. Since the landowners and the public are the only stakeholders that always contributed in each of the projects, are the only ones that should always receive benefits in each of the projects. The developers are the ones that should receive the least on average (M=2.68, SD=2.98), reaching a maximum of 10 percent, and with developers that in theory, should not receive benefits, because as developers they did not contribute; as explain before, those stakeholders were also playing other roles, and their benefits were accounted as those other roles. Investors should receive on average 4 percent (SD=13.25) with a maximum value on project 14 (57%). The non-stakeholders of the LR projects should receive on average 63 percent (SD=24.83).

Table 13: Balanced benefits – Percentile Data

Stakeholders	Mean	Median	Std. Deviation	Minimum	Maximum
Landowners Balanced Benefits	12.00	8.00	13.71	1.00	49.00
Public Balanced Benefits	18.89	17.00	9.67	7.00	51.00
Developers Balanced Benefits	2.68	1.00	2.98	0.00	10.00
Investors Balanced Benefits	3.68	0.00	13.25	0.00	57.00
Non LR Stakeholders Benefits	62.68	73.00	24.83	0.00	82.00

* Values are in percentages (%)

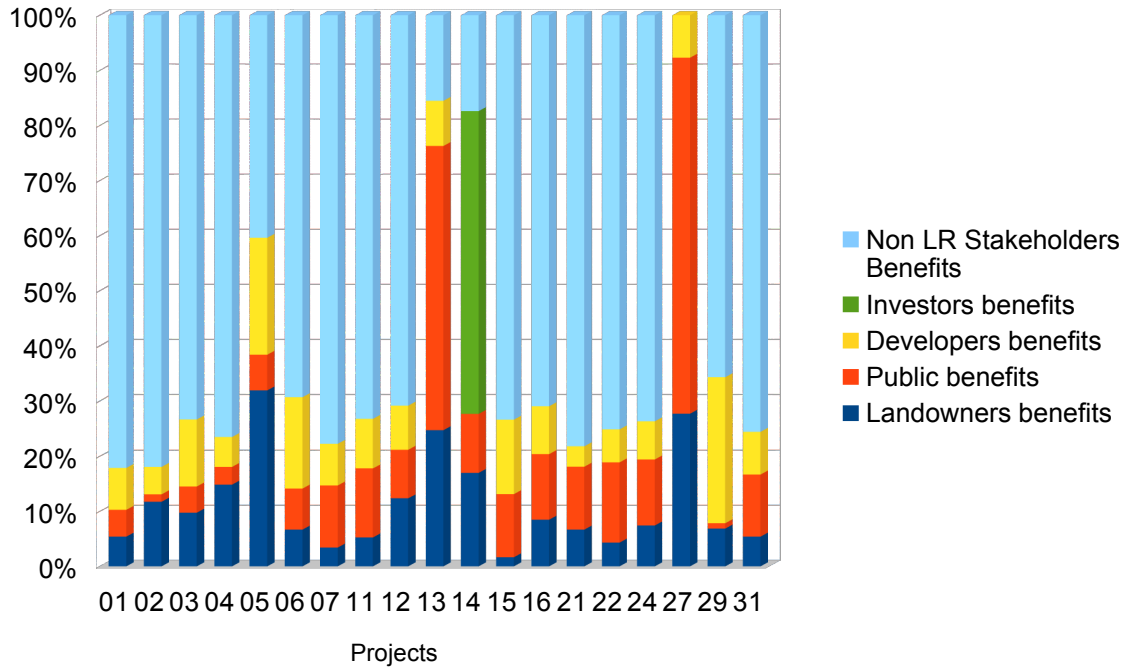
By graphically comparing Chart 9 with Chart 10, it can be seen some differences, the most visible one is that the benefits of the developers are higher that what they should be, pushing down the benefits of the public, and in less proportion the benefits of the landowners. The same comparison ca be done with Tables 10 and 12, in this case comparing the results of the Public and the Developers show us a trade-off between them. To be accurate, a deduction was made to find the arithmetic difference between those two values, in each of the projects, and a descriptive analysis was made with the difference (Table 14). The results show that Landowners are receiving on average 1 percent (SD=7.51) less than what they should, the public is receiving 5 percent (SD=9.00) less than it is supposed to, and investors are also receiving less than the balanced benefits (M=-0.79, SD=2.99). The developers on contrary, are receiving 5 percent (SD=5.38) more than what the should.

Table 14: Difference between benefits (balanced vs received) – Percentile Data

Stakeholders	Mean	Median	Std. Deviation	Minimum	Maximum
Landowners Difference	-1.11	0.00	7.51	-22.00	8.00
Public Difference	-5.05	-6.00	9.00	-19.00	19.00
Developers Difference	6.89	7.00	5.38	-1.00	21.00
Investors Difference	-0.79	0.00	2.99	-13.00	0.00

* Values are in percentages (%)

Chart 10: Benefits per stakeholders



With these results, a test was conducted, to see if the differences between the means of each group of stakeholders was statistically significative, in order to draw conclusions that can be generalized to the population the sampled projects represent, in this case, the Land Readjustment projects enacted in Colombia. A one-way ANOVA test was conducted in SPSS with a Tukey post-hoc to compare the means between the groups, the variables used were, the groups of stakeholders, as the independent variable, and the difference in the benefits, as

the dependent variable. Each row in SPSS represented one stakeholder, in the stakeholder variable, landowners were assigned value 1, public value 2, developers value 3, investors value 4, and non-stakeholders value 5. there was also an ID variable, to identify from which project was each of the stakeholders, so the data can be traced back, and reviewed if there was any mistake or unreliable data. In Table 15, an example of the data in SPSS can be seen, with the information of projects 01 and 02.

Table 15: Example of SPSS data for ANOVA test on the difference of benefits between stakeholders

D	Stakeholder	Difference
1	1	0.00
1	2	-7.00
1	3	7.00
1	4	0.00
1	5	0.00
2	1	7.00
2	2	-6.00
2	3	-1.00
2	4	0.00
2	5	0.00

There was a statistically significant difference between the groups of stakeholders as determined by the one-way ANOVA tests, ($F(4,90) = 10.148$, $p = .000$). The Tukey post-hoc revealed that only the developers had a statistically significant difference with all of the other actors, with the landowners (6.89 ± 8.0%, $p = .001$), with the public (6.89 ± 11.9%, $p = .000$), with the investors (6.89 ± 7.7%, $p = .001$), also with the non-LR stakeholders (6.89 ± 6.9%, $p = .005$). However, between the other stakeholders there were no statistically significant differences. The results of this test confirmed the observed pattern in the Charts and Tables, corroborating that the developers are receiving more benefits than what they should, and therefore, de-balancing the distribution of costs and benefits in the Land Readjustment projects, generating an inequitable share on the value of land between stakeholders.

Chapter 5 : Conclusions and recommendations

This Research aimed to test the equity of stakeholders in Land Readjustment projects in Colombia on Sharing the Value of Land. Considering that, the framework for LR in Colombia has deficiencies in the implementation phase. There was the possibility that, landowners were not participating voluntarily, and the leadership of the private developers was not a guarantee for equity.

5.1 Key arguments and lessons

The institutional setup that LR has in Colombia differs from what theory states, mainly because in Colombia, the two main characteristics of LR are separated, the Land Assembly method and the Cost-Recovery tool. Whereas the Cost-Recovery tool is used as a general setup for all Partial Plans; the Land Assembly method, with voluntary participation of landowners, is only one option to assemble land, the least used option. These conditions could be influencing the implementation of the LR projects, because according to the theory, it is the Land Assembly method of LR, which allows for the Cost-Recovery tool to be more effective in keeping the transaction costs low. Some municipalities are implementing new regulations that aim for including the original landowners in the process, and pilot projects are being developed on that goal. Further analysis will be necessary as to be able to diagnose the implementation phase of the LR projects in Colombia, and measure the impact of the current institutional framework on the project development and completion.

Results have shown that original landowners are being bought out, and therefore, not participating in the LR process. These results have been tested and it was found that there is a statistically significant difference between what the initial status is, according to the project documents and what really happens in the development of the projects. Developers and investors have been acquiring land to develop the projects. This is a common practice in Colombia, which according to theory undermines a basic principle of LR, the land assembly method, that differs from any other method. Because, associating the original landowners will keep the transaction costs low. By acquiring land, the LR projects are increasing the value of it, putting at risk the balance between costs and benefits, and therefore, to maintain that balance, more FAR has to be authorized by the municipality to rebalance the equation. This balancing exercise could represent a problem in the future to the economic stability of the development sector in Colombia. Therefore, it will be important to further analyze what will be the impact of the land acquisition process in PPs on the overall financial results of the LR projects.

The value of land has increased in all of the projects, it has increased enough to cover all the costs and leave a surplus for the stakeholders. In each of the projects the value of land has increased in different percentages, between 61% and 1479% depending on several factors, such as location, future use permitted and other endowment factors, which make each project unique and each plot different. This coincides with the theoretical arguments that, land increases its value by actions from others besides the landowner's own actions. In the case of this research, because the municipality granted permits and extra FAR, or by the action of the developers that initiated the projects. Moreover, in the cases of voluntary participation, it was also the decision of the landowners to participate that increased the value of land. This fact could be further research, as it will help increase the body of knowledge about how the land value increases and who is generating that increment.

This research has also contributed to support the arguments in favor of including the costs of infrastructure and services in the projects. All of the projects have included the costs of infrastructure and services needed, and even some included infrastructure that will serve the

public as a whole, like the case of the BRT station. The developers of these projects are supporting this argument with their actions. This could be useful in cities where developers are reluctant to include this costs, with the argument that those costs will be transferred to the buyers. This research has contributed evidence of cases where it is done and the costs are assumed by the increase in the value of land.

Results have shown that landowners are not being motivated to participate in the LR projects because the benefit they receive after the LR is not significantly higher than the value they contributed with their land. The lack of statistically significant difference between the initial value of the land and the final value of the land backs up this finding. On contrary, the statistically significant difference between the initial value of the land and the increased value of the land including profits, gives a path of action; developers should share the profits to motivate landowners to participate. This situation might be happening, since some landowners are also developers that bought in their participation, and therefore, are receiving benefits as landowners but also as developers. The theoretical approach to this situation will be that, if developers share the profits of the projects with the landowners, landowners will be motivated to participate, therefore, there will be no need to buy out original landowners, keeping the transaction cost low. Further research could be conducted to assess what is the influence of the value of land in the landowners' decision to participate or not in LR projects.

The cost and benefits included in the budget calculation have similar percentile distributions amongst all of the projects. Except for the ones that do not include the costs of the buildings, there was none observed difference in the distribution of the costs, between projects in different treatments. Projects in redevelopment treatment had a similar distribution as projects in development treatment or any other treatments. In this sense, the projects that did not include the costs of construction of the buildings could have created a distortion in the mean values of each variable. However, it was important to include them, because it can give an overview of all LR, without affecting the results on the main research question, since those projects, had similar results as all of the other projects tested in the main research question. Further research could be conducted with a different sample separating the projects that included the costs of construction from the ones that did not, and compare the results.

Most of the projects did not rely on direct subsidies to pay for the costs, only one of the projects was fully subsidized by the government, because it was intended to provide for social housing, as a way for the public to intervene in the market when there is a matter of public interest, particularly in Colombia, where social housing is a merit good and therefore, the government should guarantee its provision. Besides this case, all projects were self-financed, by selling real-estate products that were meant to pay for the costs and leave a profitable development. In this sense, it is a good lesson to understand that, a project could be self-financed, using the market and other tools like the trust system to fulfill this goal.

Finally, stakeholders of enacted Land Readjustment projects in Colombia are not sharing the value of land equitably, as the main results of this research indicate, there is a statistically significant difference between the groups of stakeholders. The difference is created by the action of the developers that are benefiting more than what they contributed. There are several reasons that can be influencing these results, it will be the task for further research to diagnose the causes of it. During this research, some distortions have been found and described, stakeholders being developers and at the same time landowners, stakeholders buying out original landowners, low clarity on the contributions of each stakeholder, changes on the initial setup of the project due to time and constraints. The aim of this research was to compare the process of Land Readjustment in Colombia with the theory that supports this Land Management Tool and provide evidence that can influence the way LR is being implemented. In that sense, this research coincides with the PILaR approach on aiming for

Land Readjustments that are more participative and balanced between stakeholders, therefore this research is contributing to that goal.

During the research process, some lessons have been learned. The importance of the Trust mechanism in the implementation of the projects is a key element. It builds a system of confidence, one of the highlighted barriers of LR. It might sound redundant but the Trusts builds trust and a proper environment for the projects to be developed. Municipalities all around Colombia are using the LR tool. It is not only the capital cities, also medium and small cities are benefiting from the tool. There is always the risk of the lack of experience on implementing LR. However, as seen in other countries, it could be less complicated if all stakeholders are committed to transform the project into a reality. The Colombian institutional framework gives several benefits to conduct researches, by allowing the general public to have access to the information, even though, some municipalities did not provide the requested information. There are remarkable goals on the overall development of the cities that the projects are achieving in their implementation, using the LR as a tool to guide the development of the cities.

5.2 Recommendations

The inclusion of original landowners in the implementation process is a key element of the Land Readjustment tool. It is a process that requires a different approach from the one that is being traditionally use in Colombia. Furthermore, it can bring great benefits in the timeframe of the projects, as the current land acquisition process is very time-consuming. Especially in redevelopment projects where maintaining the current population can bring equity in an economic and social perspective not only in the financial aspect of it.

Municipalities should create methodologies to do an assessment process beyond the project enactment, the decree culminates a process of collaboration that, in some cases, took several years, it is not until the project is constructed that the benefits for the society as a whole will materialize. Therefore, it is important for the municipalities to accompany the process of concretion. In this process it is important for municipal officials to share knowledge between them, do peer reviews and case studies, as it is a way how mistakes can be detected and corrected on time, and a collective body of knowledge can be created to improve the process on the overall view. It can also be beneficial to share knowledge between different municipalities, as the framework for LR is the same for the whole country, this kind of communication can nurture the local implementation processes, and improve the local regulations.

In the process of design of the projects, there are a few tasks that can be beneficial for the overall outcome; conducting appraisals on the initial value of the land and contrasting them with the final value of land, to evaluate if the adjustments that the landowners will receive will have more value than what they have contributed, therefore, motivating the original landowners to participate in the LR projects. Including the cost of time with dynamic models will give a real sense of time, specially if, one of the reported problems is the long processes of implementation, a better understanding of the costs and benefits in a specific time frame, can give new guidelines that can be included in the enacting documents. Finally, it is important to control and evaluate the adjustments received and the profits generated, since, maintaining the balance is a crucial task, and generating equity is crucial for a country that currently has one of the most unequal societies in the world.

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Chapter 7 :Annexes

7.1 Annex 1: Compared variables between Yilmaz, Çağdaş, et al., (2015) and the operationalized indicators

VARIABLES	INDICATORS	INDICATORS (Yilmaz, Çağdaş, et al., 2015)
voluntary participation of landowners		
participation of landowners is a direct inclusion of original owners in the decision-making process of Land Readjustment projects. Without buying out landowners. And is fundamental for the implementation of a LR project.		
direct inclusion	Are the landowners participating in the decision-making process?	(1) Does participation ensured in the projects (y/n),
	percentage of landowners participating	
	what it is the decision-making process like?	(2) if yes, what is the participation type (direct or indirect)?
	"The LR projects are explained in details to the landowners. (y/n)"	The LR projects are explained in details to the landowners. (y/n)
	number of meetings hold with landowners	
	kind of decisions taken by the landowners	
	"It is possible for land ownership disputes to cause delays in projects? (y/n)"	It is possible for land ownership disputes to cause delays in projects? (y/n)
original landowners	is the property registry reflecting expropriation or compulsory acquisition before the project?	The technical processes of LR have adequate standards (y/n).
	Is the government a landowner?	
	Is there any "measure for landowners to remain after the project? (y/n)"	Is there any legal measure for landowners to remain after the project? (y/n)
	where there transparency issues in the land registration history?	(1) Every step is transparent in LR (y/n), (2) list of the nontransparent processes.
no buying out	"Is there any measure to reduce or prevent plot speculation? (y/n). If yes, list of the available measures"	Is there any measure to reduce or prevent plot speculation? (y/n). If yes, list of the available measures
	"Is there any solution for landowners who want to leave the project? (y/n) If yes, list them."	Is there any solution for landowners who want to leave the project? (y/n) If yes, list them.
cost recovery tool		
Cost Recovery is the process of self-financing a Land Readjustment by valuating the initial plots of land and calculating the future value after the project, the difference should be used to reserve part of the land for allocation of services and infrastructure needed for the project, selling part of the land to pay for the installation of those services and the infrastructure and giving back to landowners the appreciated residual land distributed by the same proportion they contributed.		
valuation	is the project calculating the initial value of land?	(1) List of the "appraisal' methods. (2) Assessment of the accuracy (y/n)
	is the project calculating the final value of land?	The data which are used in the LR projects such as planning and valuation has adequate quality.
costs included	is the cost of time included? What is the percentage on it?	What is the average time for projects?
	Is the cost of land included? What is the percentage on it?	(1) List of the cost recovery tools and their efficiency. (2) What is the max, average and minimum cost recovery in the projects (%)?
	is the cost of land reserved for public use included? What is the percentage on it?	
	is the cost of in-site services and infrastructure included? What is the percentage on it?	
	is the cost of off-site services and infrastructure included? What is the percentage on it?	
	Are financial costs included? What is the percentage on it?	
	Are profits included as costs? What is the percentage on it?	
	Are the costs of building the project included? What is the percentage on it?	The construction process and the costs are included in LR process (y/n).
benefits included	Is the project receiving subsidies from the government?	List of the subsidies that can be used in LR.
	Is the project receiving extra development rights from the government?	(1) List of the value captures tools, (2) What is the max, average and minimum value capture in the projects (%)?
land returned	Are the landowners receiving serviced land, development rights or payment at the end of the process?	(1) List of the distribution bases in LR projects. (2) What are the criteria used in the selection of the distribution base? (3) The differences in allocation is calculated and compensated (y/n). If yes; how is the process?
	Are the landowners getting all the benefits they are entitled to?	
	Are they selling land or rights to cover the development of the infrastructure and services?	
	Are they selling land or rights to cover the development of the project?	
land value sharing		
mobilizing the increments on the value of land created by the different stakeholders to benefit the community as a hole and the stakeholders in an equitable distribution of cost and benefits.		
mobilizing	Is the value being mobilized or payed out by some stakeholders?	List of the existing criteria for the allocation. How is the allocation process?
equitable distribution	is the increase in the value of land being distributed equitably amongst stakeholders? Percentage of value perceived by each stakeholder?	(1) List of the cost payers. (2) What is the max, average and min percentage of the costs paid by each actor?
	"Is there any assessment process for equality of landowners, how is the sharing of the costs and the profits?"	(1) Is there any assessment process for equality of landowners, (2) how is the sharing of the costs and the profits?

7.2 Annex 2: Data Template – Code Book

Assumptions for the data input
Rules for all the cells:

1	All the information included in any of the sheets should be obtained from the decree enacting each PP or in the Technical Support Document (Documento técnico de Soporte – DTS) and it should be highlighted in the document to make it easy for the reader to trace the reference or the assumptions.
2 *	Any remark or annotation can be made at the bottom of each sheet by adding consecutive asterisks to number them and also include the asterisks in the cell to be clarified. Notes area can also be used to include additional information of the PP or the UAU – UG that can help illustrate the case, for example the areas of the others UAU -UG can help understand the size of the project.
3	All the cells in light green should be fill in.
4	If a formula is changed because it will reflect the situation of the particular project this should be highlighted in orange and explain in the notes at the bottom of the sheet.
5	Yellow highlights are used for important information or results that will be useful to answer the research questions.
6	The formulas in the comments column of this sheet are indicative, the may change if more columns or rows are inserted in the spreadsheets.

* this format is based on the document Morales2015e_LandValueFinancialAnalysis.xls by Carlos Morales-Schechinger (2015)

Sheet	Concept	Cell	Explanation	Comments
Participation	Management Unit – Urban Action Unit (UAU) – #	A1	The Urban Action Unit (UAU) is the mechanism us in the Colombian law 388 of 1997 to develop a defined area of a Partial Plan (PP) using any of the variants of Land Readjustment (LR). Management Unit (Unidad de Gestión – UG) is a common practice in the country to recognize the development of an area but with the agreement of all landowners, this practice is not state in the law.	In this cell the number of the UAU – UG should be fill in, if there is only one UAU – UG then it should be completed by the word "single".
	Owner	A3....	Are the names of each landowner as it is stated in the decree or in the Technical Support Document (Documento técnico de Soporte - DTS)	This information can be triangulated with the certificate of tradition of the property
	Area	B3....	Is the area of each plot or group of plots owned by the same landowner as it is stated in the decree or in the Technical Support Document (Documento técnico de Soporte - DTS)	If a landowner owns more than one plot the area should be added in one single row
	# of plots	C3....	Is the number of plots owned by each landowner that the area in column B is representing	Regardless of the area of each plot.
	% of ownership	D3....	Is the percentage of land owned by each landowner from the total area of the UAU – UG	Formula =B3*1/B$5
	Participating	E3....	The will of a landowner to participate may change during time or even the owner may change, to fill in this cells the researcher should find in the texts evidence of the willingness to participate of each owner, this information will be find easily in the DTS as it might explain deeper than the decree. In Colombia Participation is calculated as a percentage of the area involved in the LR, as explain by Maldonado, Pinilla, et al. (2006)	Fill in with values 1=participating, 0=NOT participating
	% of Participation	F3....	If each landowner is agree in this column should appear the same percentage as in column D	Formula =IF(E3=1;D3;0)
	Original Landowner	G3....	In some cases there can be found evidence of buying out of landowners, for example when a real state company or a trust is created and buys land previous to the enactment of the decree they should appear as owners of several plots o land, since this practice is perfectly legal it does not constitute a misconduct and proofs can be found in the documents stating clearly that those companies bought that land. But since this is a critical point according to theory of the LR process the fact that they are buying out landowners constitutes a misapplication of the instrument.	Fill in with values 1=Voluntary participating, 0=NOT voluntary participating
	Voluntary Participation	H3....	If each landowner is the original landowner and is voluntarily participating in the LR in this column should appear the same percentage as in column F	Formula =IF(G3=1;F3;0)
	Totals		Aggregates the values of each column, the total values of column F and H are used in the summary as an input to answer main questions	Formula =SUM(B3:B4)
	notes		this area should be used to explain specific cells information.	
Land Value Capture – LVC	Value PP	B4-B6	If the PP has different UAU's then it could be important to have a comparison and context for this values.	
	Value UAU-#	C3	In this cell the number of the UAU – UG should be fill in, if there is only one UAU – UG then it should be completed by the word "single".	
	Initial Value of Land	C4	Is the value of all the plots of land in the UAU – UG with the initial conditions of development, as it is stated in the decree or in the Technical Support Document (Documento técnico de Soporte - DTS)	normally this value is shared by the developer as the appraisal is done.
	Final Value of Land	C5	Is the value of all the plots of land in the UAU – UG after de project is finished, as it is stated in the decree or in the Technical Support Document (Documento técnico de Soporte - DTS)	normally this value is shared by the developer with a calculation of the residual value of land
	Increment in the Value of Land	C6	Is the percentage that land has appreciated according to the values stated in the decree or in the Technical Support Document (Documento técnico de Soporte – DTS)	Formula =(C5-C4)/C4
	Total Area (Gross area)	B9	Is the total area of the plots included in the UAU – UG.	Formula =Participation.B5
	Initial Value/m2	C9	Is the value per square meter of land in the UAU – UG with the initial conditions of development, calculated as the quotient of the initial value of land divided by the area of the UAU – UG.	Formula =C4/B9
	Final Value/m2	D9	Is the value per square meter of land in the UAU – UG after de project is finished, calculated as the quotient of the Final value of land divided by the area of the UAU – UG.	Formula =C5/B9
	Increment	E9	Is the percentage that land has appreciated calculated from the initial and final value of the land per square meter.	Formula =(D9-C9)*1/C9
	Residual Area (Net area)		Is the amount of land that the landowners will receive after all the area needed for public use is deducted from the gross area of land.	
	Area of Public streets	B12	Is the area deducted for public streets as it is stated in the decree or in the Technical Support Document (Documento técnico de Soporte - DTS), this category can be adjusted to better reflect the conditions of the project.	If the category is adjusted change the name in cell A12, try NOT to include new rows between row 12 and row 16 to keep the number of cells fixed.
	Area of Public green spaces	B13	Is the area deducted for public green spaces as it is stated in the decree or in the Technical Support Document (Documento técnico de Soporte - DTS), this category can be adjusted to better reflect the conditions of the project.	If the category is adjusted change the name in cell A13, try NOT to include new rows between row 12 and row 16 to keep the number of cells fixed.
	Area of Public infrastructure	B14	Is the area deducted for public infrastructure as it is stated in the decree or in the Technical Support Document (Documento técnico de Soporte - DTS), this category can be adjusted to better reflect the conditions of the project.	If the category is adjusted change the name in cell A14, try NOT to include new rows between row 12 and row 16 to keep the number of cells fixed.
	Total Area Deducted	B15	Is the sum of all the areas taken for public use	Formula =SUM(B12:B14)
	Residual Area (Net area)	B16	Is the difference resulting from subtracting the total area for public use from the gross area.	Formula =B9-B15
	Projected Adjusted area	B19	Is the area that all of the landowners will get back to develop after the readjustment is done	According to theory this area can be sold to pay for the costs of developing the project and the benefits be obtained as a payment instead of in kind, this is refer to the "adjustment" in theory
	% of Adjusted area	C19	is the area of land that all of the landowners will bet back after the readjustment express as a percentage of the total area.	Formula =B19*1/B9

	Receiving more valuable land?	E19	According to theory landowners will be encouraged to participate in a LR if the the land that they get back is more valuable than the land that they gave to be readjusted even though it is less land.	Formula =IF(D19>=C4;"YES";"NO")
	Projected Adjusted area + Profits	B23	Is the area that all of the landowners will get back to develop after the readjustment is done	According to theory all the profits or losses should be obtained or covered by the landowners, therefore any profit or loss should be added to or deducted from the final value of land so the landowners will benefit or bare this value.
	Final Value/m2	C23	Is the value per square meter of land in the UAU – UG after de project is finished, including the profits, calculated as the quotient of the Final value of land plus the profits divided by the residual area or adjusted area.	Formula ='Summary '.I9/B9
	Final Value of Adjusted Land + Profits	D23	Is the total amount of cash that the landowners will receive if they sell the adjusted land at the appreciated value including the profits, calculated as a product of the final value of land per square meter including profits by the adjusted area or net area.	Formula =B23*C23
	Receiving more valuable land?	E23	According to theory landowners will be encouraged to participate in a LR if the the land that they get back is more valuable than the land that they gave to be readjusted even though it is less land. If the profits or losses are part of the benefits or costs that the landowners will receive or pay then their decision to participate can change.	Formula =IF(D23>=C4;"YES";"NO")
	notes		this area should be used to explain specific cells information.	

Cost-Benefit Analysis	**Unit**	B1	Is the unit of calculation for the listed costs or benefits.	Square meters = M2, Percentage = %, Global unit = GL
	Quantity	C1	Is the amount of the item to be calculated	
	Unit value	D1	is the cost of one unit of the item calculated	
	Calculated Value	E1	Is the result of multiplying the quantity by the unit value. The Calculated Value is used here to verify if the information listed in the documents coincides with the mathematical calculation of it	Formula =C3*D3
	Listed value	F1	Is the cost used for each item as it is stated in the decree or in the Technical Support Document (Documento técnico de Soporte – DTS), this is the value that will be used for the summary calculations.	this value can variate from the calculated values for several reasons, some reasons are: because of the model was a dynamic model and it needs to be presented as a static model, because there are multipliers or rates not show in the documents like taxes, miscalculations or others.
	Percent Deviation	G1	Is the percentage of variation between the calculated value and the listed value, it can give an idea of the validity of the data collected.	Formula =IF(AND(E7; F7)<>0; (F7-E7)*1/E7; "N/A")
	Costs	A2	Is the total amount of value that will be needed to develop the UAU – UG.	
	Cost of Land	A3	Is the cost of land deducting the cost of land reserved for public use (Net Area).	
	Cost of land reserved for public use	A4	Is the cost of land reserved for public use (Total Area Deducted).	
	Increase in the value of land payed to the landowners	A5	Is the value that land has appreciated calculated as a residual from the final value of the land minus the initial value of land.	
	Cost of in-site services and infrastructure	A6	Are the costs that the project has to cover inside the area of the project in order to fulfil the needs of the project. Called "Cargas Locales" in Colombia.	
	In-site 1		list the items as presented in the decree or in the Technical Support Document (Documento técnico de Soporte – DTS),	
	In-site 2		list the items as presented in the decree or in the Technical Support Document (Documento técnico de Soporte – DTS),	
	In-site 3...		list the items as presented in the decree or in the Technical Support Document (Documento técnico de Soporte – DTS),	More rows can be included as needed.
	Cost of off-site services and infrastructure		Are the costs that the project has to cover outside the area of the project in order to fulfil the needs of the project. Called "Cargas Generales" in Colombia.	
	Off-site 1		list the items as presented in the decree or in the Technical Support Document (Documento técnico de Soporte – DTS),	
	Off-site 2		list the items as presented in the decree or in the Technical Support Document (Documento técnico de Soporte – DTS),	
	Off-site 3...		list the items as presented in the decree or in the Technical Support Document (Documento técnico de Soporte – DTS),	More rows can be included as needed.
	Financial costs		Are the costs of the financing the project, including interest rates on borrowed cash.	
	Profits		Some projects include a cost of developing the project.	According to theory all the profits or losses should be obtained or covered by the landowners, therefore any profit or loss should be added to or deducted from the final value of land so the landowners will benefit or bare this value.
	Costs of building the project		Are the costs associated with building the project, excluding the costs of infrastructure or services included in other items.	
	Indirect Costs of building the project		Are the costs that are not directly applied to the construction but that will allow for the project to be developed, like the contractors payment or the required studies.	
	Pre-development Costs		Are the costs that the project has to pay before it starts its development.	Can include the costs of developing the PP.
	Benefits		Is the total amount of value that will receive the project to cover the costs and break even.	
	Subsidies from the government		Are the benefits received from the government that is not linked to a sale of rights or area in the project.	
	Development rights received		Are the benefits in terms of Floor-Area Ratio (FAR) received to finance the project.	this benefits can be development rights, change of uses or incorporation of rural areas to urban uses.
	Use 1		list the items as presented in the decree or in the Technical Support Document (Documento técnico de Soporte – DTS),	
	Use 2		list the items as presented in the decree or in the Technical Support Document (Documento técnico de Soporte – DTS),	
	Use 3...		list the items as presented in the decree or in the Technical Support Document (Documento técnico de Soporte – DTS),	
	notes		this area should be used to explain specific cells information.	

	Participation			
	percentage of landowners participating	C3	Is the total ratio of landowners participating in the UAU – UG.	Formula =$Participation.F5
	Percentage of Local Government owned land	C4	Is the total ratio of land owned by the government participating in the UAU – UG.	Fill in with the total percentage of government owned land participating in the UAU – UG.
	Original Landowners	C5	Is the total ratio of landowners participating Voluntarily in the UAU – U G .	Formula =$Participation.H5
	Voluntary Participation	C6	According to theory if the landowners participating in the UAU – UG are voluntarily joining without being bought out then it is a LR in terms of the land assembly method used. Therefore if the values of C3 and C5 are equal this cell will be display the word YES.	Formula =IF(C5=C3;"YES";"NO")
	LVC			
	initial value of land	C8	Is the value of all the plots of land in the UAU – UG with the initial conditions of development, as it is stated in the decree or in the Technical Support Document (Documento técnico de Soporte - DTS)	Formula =$LVC.C4
	final value of land	C9	Is the value of all the plots of land in the UAU – UG after de project is finished, as it is stated in the decree or in the Technical Support Document (Documento técnico de Soporte - DTS)	Formula =$LVC.C5

Summary	Increment in the Value of Land	C10	Is the percentage that land has appreciated according to the values stated in the decree or in the Technical Support Document (Documento técnico de Soporte – DTS)	Formula =(C9-C8)*1/C8
	Value of land Including Profits	C11	Is the value of all the plots of land in the UAU – UG after de project is finished, including the profits.	Formula =C9+$'Cost-Benefit Analysis '.F15
	Increment in the Value of Land including profits	C12	Is the percentage that land will appreciate if the final value of land was calculated including the profits.	Formula =(C11-C8)*1/C8
	Value of Land without sharing costs	C13	Is the value of all the plots of land in the UAU – UG after de project is finished, if the final value of land was calculated without sharing the costs of building the infrastructure and services required and including the profits.	Formula =$'Cost-Benefit Analysis '.F3+$'Cost-Benefit Analysis '.F4+$'Cost-Benefit Analysis '.F5+$'Cost-Benefit Analysis '.F6+$'Cost-Benefit Analysis '.F10+$'Cost-Benefit Analysis '.F15
	Increment in the Value of Land without sharing costs	C14	Is the percentage that land will appreciate, if the final value of land was calculated without sharing the costs of building the infrastructure and services required and including the profits.	Formula =(C13-C8)*1/C8
	Costs			
	Cost of Time	C16	Is the percentage from the total costs that has the value of time.	
	Cost of Land	C17	Is the percentage from the total costs that has the value of land deducting the cost of land reserved for public use (Net Area).	Formula =$'Cost-Benefit Analysis '.F3/$'Cost-Benefit Analysis '.F2
	Cost of land reserved for public use	C18	Is the percentage from the total costs that has the cost of land reserved for public use (Total Area Deducted).	Formula =$'Cost-Benefit Analysis '.F4/$'Cost-Benefit Analysis '.F2
	Increase in the value of land payed to the landowners	C19	Is the percentage from the total costs that has the value that land has appreciated calculated as a residual from the final value of the land minus the initial value of land.	Formula =$'Cost-Benefit Analysis '.F5/$'Cost-Benefit Analysis '.F2
	Cost of in-site services and infrastructure	C20	Is the percentage from the total costs that has the costs that the project has to cover inside the area of the project in order to fulfil the needs of the project. Called “Cargas Locales” in Colombia.	Formula =$'Cost-Benefit Analysis '.F6/$'Cost-Benefit Analysis '.F2
	Cost of off-site services and infrastructure	C21	Is the percentage from the total costs that has the costs that the project has to cover outside the area of the project in order to fulfil the needs of the project. Called “Cargas Generales” in Colombia.	Formula =$'Cost-Benefit Analysis '.F10/$'Cost-Benefit Analysis '.F2
	Financial costs	C22	Is the percentage from the total costs that has the costs of the financing the project, including interest rates on borrowed cash.	Formula =$'Cost-Benefit Analysis '.F14/$'Cost-Benefit Analysis '.F2
	Profits	C23	Is the percentage from the total costs that has the profits of the project..	Formula =$'Cost-Benefit Analysis '.F15/$'Cost-Benefit Analysis '.F2
	Costs of building the project	C24	Is the percentage from the total costs that has the costs associated with building the project, excluding the costs of infrastructure or services included in other items.	Formula =$'Cost-Benefit Analysis '.F16/$'Cost-Benefit Analysis '.F2
	Indirect Costs of building the project	C25	Is the percentage from the total costs that has the costs that are not directly applied to the construction but that will allow for the project to be developed, like the contractors payment or the required studies.	Formula =$'Cost-Benefit Analysis '.F17/$'Cost-Benefit Analysis '.F2
	Pre-development Costs	C26	Is the percentage from the total costs that has the costs that the project has to pay before it starts its development.	Formula =$'Cost-Benefit Analysis '.F18/$'Cost-Benefit Analysis '.F2
	Benefits			
	Subsidies from the government	C28	Is the percentage from the total benefits that has the benefits received from the government that is not linked to a sale of rights or area in the project.	Formula =$'Cost-Benefit Analysis '.F20/$'Cost-Benefit Analysis '.F19
	Development rights	C29	Is the percentage from the total benefits that has the benefits in terms of Floor-Area Ratio (FAR) received to finance the project.	Formula =$'Cost-Benefit Analysis '.F21/$'Cost-Benefit Analysis '.F19
	Value Sharing			
	Landowners benefits	C31	Is the percentage of the benefits received by the landowners, according to theory this will be the cost of land plus the increase in the value of the land.	Formula =C17+C19
	Public benefits	C32	Is the percentage of the benefits received by the public, according to theory this will be the cost of public land plus the in-site and off-site costs.	Formula =C18+C20+C21
	Developers benefits	C33	Is the percentage of the benefits received by the developers, the profits.	Formula =C16+C23
	Investors benefits	C34	Is the percentage of the benefits received by the Investors.	
	Trust benefits	C35	Is the percentage of the benefits received by the trust.	
	Non LR Stakeholders (buyers, contractors or others)	C36	Is the percentage of the benefits received by other actors that are not stakeholders.	
	Non LR Stakeholders (buyers or others)	C37	Is the percentage of the benefits received by other actors that are not stakeholders mostly related to buyers of the project..	Formula =C24
	Non LR Stakeholders (contractors)	C38	Is the percentage of the benefits received by other actors that are not stakeholders, mostly contractors.	Formula =C25+C26
	Banking	C39	Is the percentage of the benefits received by the financial sector.	Formula =C22
	Contribution	D30 – D35	According to theory every stakeholder should benefit according to what it has contributed. In this cells the contribution distribution should be expressed.	The standard formulas are in accordance with what theory explains about the contribution of each stakeholder: the landowners are giving their land: =C17+C18. The government is authorizing the increases in density, change of uses and regulations: =C19+C20+C21+C23. The developers are paying for the cost of time and the cost of the pre-development costs: =C16+C26. The investors are acquiring rights from the landowners and therefore will be sharing with them their percentages. The trust, if used is a mechanism that allows to cover several costs mainly the cost of building the project: =C22+C24+C25.
	Equity Multiplier	C41	It is a ratio that allows to balance the benefits received according to the contributions given.	Formula =C$30/SUM(D$31:D$35)
	Balanced benefits	E30 – E35	Are the percentages of benefits that each stakeholder should received according to it contributions.	Formula =D31*C$41
	Trust Equity Multiplier	C42	Since the trust is not a stakeholder but a system that allows for the different actors to interact, its benefits should be distributed amongst the stakeholders equitably. Therefore a Trust Equity Multiplier is used in a similar way as the Equity Multiplier.	Formula =E$35/SUM(D$31:D$34)
	trust benefits	F30 – F35	This cells show the percentage of the trust benefits that each group of stakeholders should receive.	Formula =D31*C$42
	Total Balance benefits	G30 – G35	This is the total percentage of the benefits that each group of stakeholders should get according to their contributions	Formula =E31+F31
	Difference	H30 – H35	This indicates in what percentage each group of stakeholders is getting more or less than they should according to their contribution.	Formula =C31-G31
	Total	H36	This indicates the percentage above or below the equitable distribution of the benefits each project is.	Formula =SUM(H31:H34)
	notes		this area should be used to explain specific cells information.	

Participation Sheet

Management Unit – Urban Action Unit (UAU) – 2							
Owner	Area	# of plots	% of ownership	Participating	% of Participation	Original Landowner	Voluntary Participation
Ciudadela El Rincón S.A.	115.828,00	1	95,00%	1	95,00%	1	95,00%
Municipio de Medellín	6.096,00	1	5,00%	1	5,00%	1	5,00%
total	121.924,00	2	100,00%		100,00%		100,00%

Notes:

Land Value Capture Sheet

Increments in the Value of Land		
Item	Value PP	Value UAU-2
Initial Value of Land	$18.415.270,00	$7.934.880,00
Final Value of Land	$23.989.404,00	$11.505.536,00
Increment in the Value of Land	30,27%	45,00%

Total Area (Gross area)	Area	Initial Value/m2	Final Value/m2	Increment
UAU-2	121.924,00	$65,08	$94,37	45,00%

Residual Area (Net area)	Area
Area of Public streets	22.738,00
Area of Public green spaces	21.137,00
Area of Public infrastructure	10.700,00
Total Area deducted	54.575,00
Residual Area (Net area)	67.349,00

Projected Adjusted area	Area	% of Adjusted area	Final Value of Adjusted Land	Receiving more valuable land?
Projected Adjusted area	67.349,00	55,24%	$6.355.486,57	NO

Projected Adjusted area + Profits	Area	Final Value/m2	Final Value of Adjusted Land + Profits	Receiving more valuable land?
Adjusted Area + Profits	67.349,00	$186,95	$12.590.924,94	YES

Notes:

Cost-Benefit Analysis Sheet

Item	Unit	Quantity	Unit value	Calculated Value	Listed value	Percent Deviation
Costs				**$26.450.539,59**	**$148.120.484,00**	
Cost of Land	M2	67.349,00	$65,08	$4.383.109,42	**$4.383.109,42**	**0,00%**
Cost of land reserved for public use	M2	54.575,00	$65,08	$3.551.770,58	**$3.551.770,58**	**0,00%**
Increase in the value of land payed to the landowners	M2	###	$29,29	$3.570.656,00	**$3.570.656,00**	**0,00%**
Cost of in-site services and infrastructure	GL			**$3.658.225,00**	**$3.658.225,00**	**0,00%**
Public streets	M2	22.738,00	$100,00	$2.273.800,00	$0,00	N/A
Green areas	M2	21.137,00	$25,00	$528.425,00	$0,00	N/A
infrastructure	M2	10.700,00	$80,00	$856.000,00	$0,00	N/A
Cost of off-site services and infrastructure	**GL**			**$0,00**	**$0,00**	**N/A**
				$0,00	$0,00	N/A
				$0,00	$0,00	N/A
				$0,00	$0,00	N/A
Financial costs	%	4,00%		$0,00	**$981.450,00**	**N/A**
Profits	GL	7,62%	$148.120.454,00	$11.286.778,59	**$11.288.209,00**	**0,01%**
Costs of building the project	GL			$0,00	**$94.001.512,00**	**N/A**
Indirect Costs of building the project	GL			$0,00	**$25.785.552,00**	**N/A**
Pre-development Costs	GL			$0,00	**$900.000,00**	**N/A**
Benefits				**$117.846.724,43**	**$148.120.454,00**	
Subsidies from the government	GL	0,00	$0,00	$0,00	**$0,00**	**N/A**
Development rights received	GL			**$117.846.724,43**	**$148.120.454,00**	**25,69%**
Commerce	M2	10.557,00	$851,09	$8.985.000,00	$0,00	N/A
Housing	M2	97.539,00	$1.116,08	$108.861.724,43	$0,00	N/A
					$0,00	N/A

notes:

Summary Sheet

Item	Unit	UAU-5
Participation		
percentage of landowners participating	%	100,00%
Percentage of Local Government owned land	%	5,00%
Original Landowners	%	100,00%
Voluntary Participation		YES
LVC		
initial value of land	$	$7.934.880,00
final value of land	$	$11.505.536,00
Increment in the Value of Land	%	45,00%
Value of land Including Profits	$	$22.793.745,00
Increment in the Value of Land including profits	%	187,26%
Value of Land without sharing costs	$	$26.451.970,00
Increment in the Value of Land without sharing costs	%	233,36%
Costs		**100,00%**
Cost of Time	%	0,00%
Cost of Land	%	2,96%
Cost of land reserved for public use	%	2,40%
Increase in the value of land payed to the landowners	%	2,41%
Cost of in-site services and infrastructure	%	2,47%
Cost of off-site services and infrastructure	%	0,00%
Financial costs	%	0,66%
Profits	%	7,62%
Costs of building the project	%	63,46%
Indirect Costs of building the project	%	17,41%
Pre-development Costs	%	0,61%
Benefits		**100,00%**
Subsidies from the government	%	0,00%
Development rights	%	100,00%

Value Sharing		**17,86%**	**Contribution**	**Balanced benefits**	**trust benefits**	**Total Balance benefits**	**Difference**
Landowners benefits	%	5,37%	5,36%	0,96%	4,22%	5,18%	0,19%
Public benefits	%	4,87%	12,50%	2,23%	9,86%	12,09%	-7,22%
Developers benefits	%	7,62%	0,61%	0,11%	0,48%	0,59%	7,03%
Investors benefits	%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%
Trust benefits	%	0,00%	81,53%	14,56%			
Non LR Stakeholders (buyers, contractors or others)		**82,14%**			**Total**	17,86%	7,13%
Non LR Stakeholders (buyers or others)	%	63,46%					
Non LR Stakeholders (contractors)	%	18,02%					
Banking	%	0,66%					

Equity Multiplier	0,1785841451
Trust Equity Multiplier	0,7885114609

notes:

7.3 Annex 3: Interview Manual

Are the stakeholders of enacted Land Readjustment (LR) projects in Colombia Sharing the Value of Land equitably?

Interview Manual

Personal Introduction

the objective of this research is to document the process of implementation of Land Readjustment projects in Colombia and its effect in the equitable distribution of costs and benefits.

The questions are oriented to understand in dept how the project was conceived and to clarify specific aspects about the decree and the Technical Support Document – DTS.

This interview will take approximately 45 minutes, I will like to ask you if it is okay to record the interview since the transcripts of the interview will be more reliable for the research evaluation and it will allow for a better development of the interview.

The information collected during this interviews is purely academic and completely confidential, the recordings will not be release in any media.

STAKEHOLDERS

- Can you explain how was your participation in the project?
- Did the landowners participated in the decision-making process?
  - How?
  - what is the decision-making process like?
- Was the project explained in details to the landowners?
  - How many meetings were hold with landowners?
  - What kind of decisions were taken by the landowners?
- Where there reluctant landowners?
  - Was the process delayed because of land ownership disputes?
- Did the government had to acquire land?
  - How?
  - ALTERNATIVE: can you explain how was the expropriation (or compulsory purchase) process in this project?
- Is there any measure for landowners to remain after the project?
- Is there any measure to reduce or prevent plot speculation?
- Is there any solution for landowners who want to leave the project?

COST AND BENEFITS

- Did the project calculated the initial and final value of land?
  - How
  - ALTERNATIVE: why it is not stated in the Technical Support Document DTS?
- What type of costs were included?
  - is the cost of time included?
  - Is the cost of land included?
    - CONDITIONAL: Also the expropriated or purchased land?
  - is the cost of land reserved for public use included?
  - is the cost of on-site services and infrastructure included?
  - is the cost of off-site services and infrastructure included?
  - Are financial costs included?
  - Are profits included as costs?
  - Are the costs of building the project included?
- Which where the benefits received by the stakeholders?
  - Is the project receiving subsidies from the government?
  - Is the project receiving extra development rights from the government?
    - How many?
  - Are the landowners receiving serviced land, development rights or payment at the end of the process?
  - How are the landowners getting all the benefits they are entitled to?
  - Are they selling land or rights to cover the development of the infrastructure and services?
  - Are they selling land or rights to cover the development of the project?

SHARING THE VALUE

- Is the value being mobilized or paid out by some stakeholders?
- How was the increase of the value of land being distributed amongst stakeholders?
- Is there any assessment process for equality of landowners?
  - how is the sharing of the costs and the profits?

Están los actores de los proyectos de reajuste de tierras promulgados compartiendo equitativamente el valor de la tierra?

Manual de Entrevistas

Mi nombre es Ricardo Daza, estoy desarrollando mis estudios de maestría en Holanda en la Universidad de Erasmus - IHS dentro de la especialización dirigida por Carlos Morales en Land Value Capture. Mi tesis analiza los proyectos de reajuste de tierras en Colombia a través de los decretos de los Planes Parciales aprobados para medir el impacto que tiene la participación de los propietarios en la distribución equitativa de cargas y beneficios.

El Objetivo de este estudio es documentar el proceso de implementación de los proyectos de Reajuste de tierras/integración inmobiliaria (LR) desarrollados en Colombia y su efecto en la distribución equitativa de costos y beneficios.

Las preguntas esta orientadas a entender a profundidad como fue concebido el proyecto y clarificar aspectos específicos acerca del decreto y el Documento Tecnico de Soporte – DTS.

La entrevista tomara aproximadamente 45 minutos, para tener una transcripción mas confiable de la entrevista, mejorar la calidad de la recolección de información y tener una conversación mas fluida, me gustaría solicitar su permiso para grabar la entrevista.

La información recolectada durante la entrevista es de carácter netamente académico y do total confidencialidad, las grabaciones no serán compartidas en ningún medio de comunicación o difusión.

ACERCA DE LOS ACTORES

- Por favor explique como fue su participación en el proyecto?
- Participaron los propietarios en el proceso de toma de decisiones?
  - Como participaron?
  - Como es el proceso de toma de decisiones?
- Se explico en detalle el proyecto a los propietarios?
  - Cuantas reuniones se hicieron con los propietarios?
  - Qué tipo de decisiones fueron tomadas por los propietarios?
- Hubo propietarios renuentes?
  - Se demoro el proceso por disputas de los propietarios?
- El gobierno ha tenido que adquirir propiedades?
  - Cómo?
  - ALTERNATIVA: puede usted explicar como fue el proceso de expropiación/venta en este proyecto?
- Existe alguna medida para que los propietarios permanezcan después del proyecto?
- Existe alguna medida para reducir o prevenir la especulación inmobiliaria?
- Hay alguna solución para los propietarios que quieren abandonar el proyecto?

COSTOS Y BENEFICIOS

- El proyecto calcula el valor inicial y final de la tierra?
  - Cómo?
  - ALTERNATIVA: Porque el valor de la tierra no esta indicado en el DTS?
- Que tipo de costos fueron incluidos?
  - Está el costo del tiempo incluido?
  - Está el costo de la tierra incluido?
    - CONDITIONAL: también el de los terrenos expropiados o adquiridos?
  - Está el costo de la tierra reservada para usos públicos incluida?
  - Está el costo de la infraestructura y los servicios al interior del proyecto incluidos?
  - Está el costo de la infraestructura y los servicios al exterior del proyecto incluidos?
  - Están incluidos los costos financieros?
  - Están las utilidades incluidas como costos?
  - Están los costos de construcción de las edificaciones incluidos?
- Cuales son los beneficios recibidos por los actores (propietarios u otros)?
  - El proyecto recibe subsidios del gobierno?
  - El proyecto recibe derechos de desarrollo (edificabilidad) adicionales del gobierno?
    - Cuántos?
  - Los propietarios reciben propiedades, derechos o dinero al final del proceso?
  - Cómo están los propietarios recibiendo todos los beneficios que les corresponden?
  - Están vendiendo tierra o derechos para cubrir el desarrollo de la infraestructura y los servicios?
  - Están vendiendo tierra o derechos para cubrir el desarrollo del proyecto?

COMPARTIENDO EL VALOR

- Las plusvalías son pagadas o movilizadas al interior del proyecto?
- Cómo se distribuye el incremento en el valor de la tierra entre los diferentes actores?
- Existe algún proceso de evaluación del reparto equitativo entre propietarios?
  - Cómo es el balance entre los costos y las utilidades?

7.4 Annex 4: Sample distribution

City	Partial Plans by city			Regional distribution	Development (Desarrollo)			Redevelopment (Renovación Urbana)			Consolidation (Consolidación)			Conservation (Conservación)			Integral Improvement (Mejoramiento Integral)			Mix		
	enacted	%	Sample		#	%	Sample	#	%	Sample	#	%	Sample	#	%	Sample	#	%	Sample	#	%	Sample
Medellín	32	17,78%	5,33	5			2			2			1						0			
Apartadó	1	0,56%	0,17	0																		
Bello	1	0,56%	0,17	0																		
Envigado	9	5,00%	1,50	2			1			1												
Itagüí	0	0,00%	0,00	0																		
Barranquilla	3	1,67%	0,50	1	1,00	1,00	1															
Soledad	0	0,00%	0,00	0																		
Bogotá, D.C.	45	25,00%	7,50	8	7,67	8,00	5			2												1
Chía	1	0,56%	0,17	0																		
Cartagena	0	0,00%	0,00	0																		
Tunja	0	0,00%	0,00	0																		
Manizales	0	0,00%	0,00	0																		
Florencia	0	0,00%	0,00	0																		
Popayán	5	2,78%	0,83	1	1,17	1,00	1															
Valledupar	1	0,56%	0,17	0																		
Montería	1	0,56%	0,17	0																		
Bogotá	0	0,00%	0,00	0																		
Quibdó	0	0,00%	0,00	0																		
Neiva	0	0,00%	0,00	0																		
Riohacha	0	0,00%	0,00	0																		
Santa Marta	1	0,56%	0,17	0																		
Villavicencio	6	3,33%	1,00	1	1,00	1,00	1															
Pasto	2	1,11%	0,33	0																		
Cúcuta	3	1,67%	0,50	1		1,00	1															
Armenia	1	0,56%	0,17	0																		
Pereira	27	15,00%	4,50	5	5,33	5,00	2			2												
Dosquebradas	4	2,22%	0,67	1		1,00	1															
Bucaramanga	0	0,00%	0,00	0																		
Barrancabermeja	0	0,00%	0,00	0																		
Floridablanca	5	2,78%	0,83	1	1,33	1,00	1															
Girón	0	0,00%	0,00	0																		
Sincelejo	0	0,00%	0,00	0																		
Ibagué	9	5,00%	1,50	2	1,50	1,00	1															
Cali	20	11,11%	3,33	3	3,67	4,00	1			1			1									
Buenaventura	0	0,00%	0,00	0																		
Cartago	0	0,00%	0,00	0																		
Palmira	1	0,56%	0,17	0																		
Tuluá	1	0,56%	0,17	0		1,00	1															
SAN ANDRÉS	1	0,56%	0,17	0	0,17																	
Total	180	100,00%	30	30	29	30	114	63,33%	19,00	48	26,67%	8,00	11	6,11%	1,83	0	0,00%	0,00	3	1,67%	0,50	3	1,67%	0,50