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What is the future of a city center after an earthquake? A case study of the reconstruction process of Portoviejo, Ecuador

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MASTER THESIS

WHAT IS THE FUTURE OF A CITY CENTER AFTER AN EARTHQUAKE?

**A case study of the reconstruction
process of Portoviejo, Ecuador.**

2018/2019 Academic Year

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Date presented: 20/05/2019

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WHAT IS THE FUTURE OF A CITY CENTER AFTER AN EARTHQUAKE?

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ABSTRACT

The lack of coordination between national and municipal government entities, and the always-changing nature of their policies tend to create contradictory scenarios in reconstruction processes. This situation often leads to overlook the opportunity to address the vulnerabilities of the affected population through the implementation of an integrated reconstruction process. Conflicting conditions increase when a disaster hits central areas of predominant economic, political, commercial and social activities. Therefore, Portoviejo, Ecuador was chosen as case study to examine the challenges involved in the reconstruction process of a city whose central area was severely affected by an earthquake. The specific questions addressed in this thesis were: why the city center of Portoviejo was left unattended in the reconstruction process? and why new centralities were created to relocate commercial and administrative services outside the city center? With these results, this thesis aims to define the causes and consequences of disregarding the recovery of the city center in the reconstruction process of Portoviejo, Ecuador. The lessons learned from the reconstruction process of Portoviejo can encourage researchers, practitioners and citizens to advocate for reconstruction processes with a more holistic approach.

1 INTRODUCTION

1.1 Disasters as agents of change and reconstruction processes as opportunities

Disasters are considered agents and catalysts of change as they provide the opportunity to the affected communities to reposition their vulnerabilities and address their needs (Davis, 1983; Blakely, 2017). As stated by Berke et al. already decades ago, the recovery period after a disaster gives an opportunity to strengthen local organizational capacities and to resolve community problems. In fact, disaster recovery has the potentiality to "increase the affordable housing stock for the poor, improve traffic circulation, renovate public facilities, and stimulate the local economy" (Berke et al., 1993, p. 93).

Two strong positions tend to be exposed in post-disaster reconstruction processes: “re-building as quickly as possible the pre-existing city and transforming the affected area into an improved territory” (Di Giovanni & Chelleri, 2019, p.1) In most cases, recovery processes tend to rebuild communities in very similar ways as pre disaster states (March et al, 2017). Communities prefer to return to their pre-disaster normality, disregarding their existing vulnerabilities because they want to restore their livelihoods as quickly as possible (Davis, 1983; Lindell, 2013). National governments also tend to reconstruct physical spaces and re-establish livelihoods as quickly as possible; even though, many studies assert that this type of responses in many instances are inadequate in economic, social, environmental and social terms (Romero & Albornoz, 2016).

1.2 Reconstruction processes: threats and opportunities

Reconstruction processes after disasters require coordination and collaboration between various agencies and disciplines. The objective of the institutions involved in post-disaster reconstruction processes should not be the creation of diverse plans, but the effective use of them (Blakely, 2017; Di Gregorio & Pereira, 2017; Okura et al, 2018). Therefore, it is particularly important for related entities and organizations to discuss their roles and work together through the reconstruction process (Van de Walle & Turoff, 2008; March et al, 2017). Nevertheless, as Romero & Albornoz (2016) cite, the gap between political discourses, measures taken, and results is a recurrent problem along reconstruction processes. Conflicting situations increase when the hazard hits central areas where economic, political, commercial and social activities are mainly represented (Davis, 2005). Therefore, the case study of Portoviejo, Ecuador, was analyzed in order to understand the challenges involved in the reconstruction process of a city whose central area was severely affected by an earthquake. The specific questions addressed in this thesis were: why the city center of Portoviejo was left unattended in the reconstruction process? and why new centralities were created to relocate commercial and administrative services outside the city center?

Blakely (2017) claims that reconstruction processes should follow plans with common aims in order to overcome the diverse challenges that come along in the phases of coordination, planning and implementation of reconstruction processes. Romero & Albornoz (2016) claim that the reconstruction process of Constitución after the 2010 earthquake answered to political and electoral pressures and demands of the private sector more than to citizens' needs. In less than six months the public-private partnership formed by the Ministry of Housing and Urban Development, the local municipality and *Celulosa Arauco*, the largest private Forestry Company in the city, developed the Master

Plan for Sustainable Reconstruction for the city of Constitución. Even though the plan advocated a sustainable development of the city, its implementation disregarded the initial guidelines in favor of external pressures and reconstruction plans that were isolated and decontextualized from the social and spatial reality of the city (Romero & Albornoz, 2016). The damage caused by the earthquake in México City in 1985 devastated its city center and its economic, political, commercial and social activities. The impact of the earthquake in the city center led to a reconstruction process with conflicting conditions, which was determined as much by political pressures as by questions of efficiency. In its initial stage, the reconstruction process failed to provide housing solutions for low-income families and economic incentives to rebuild the city center (Davis, 2005). This situation generated general dissatisfaction on the affected families and the lack of interest of private investors in financing projects in the city center. As a result, people began to “organize on their own and reclaim the city for themselves by taking over the business of recovery and reconstruction without assistance from government authorities” (Davis, 2005, p.270). Citizens’ self-organization around recovery efforts produced social mobilizations and lasting changes in the politics of this city including the transformation in property rights and land use policies. According to Davis (2005), the earthquake was the catalyst that spurred the residents of México City into action; in other words, the earthquake triggered urban, social and political transformations.

The thesis starts with a brief conceptual discussion about reconstruction processes, which serves as an analytical framework. The remaining part of the document is organized in five sections. The methodology describes a qualitative analysis of secondary data and the interviews done to complement this information. The case study section gives a general overview of the disaster event that hit Ecuador in 2016 and a brief description of the city of Portoviejo, Ecuador. The next section covers the guidelines and projects described in the plans created for Portoviejo after the earthquake by governmental and municipal institutions. The discussion and conclusions are at the end.

2 METHODOLOGY

The results of this thesis come from the analysis of primary and secondary data of the reconstruction process of Portoviejo after the 2016 earthquake. Guidelines and projects defined in plans created by the Government of Ecuador and the Municipality of Portoviejo were reviewed to identify causes and consequences of the reconstruction process of Portoviejo, Ecuador. This analysis was complemented with information obtained from structured interviews. The three plans analyzed were the National

Reconstruction Plan “Plan *RECONSTRUYO*”, the Indicative Plan of Urban Development for Portoviejo (PIDU) and the Urban Regeneration Plan for Portoviejo. The Technical Secretariat for Reconstruction, a state entity created by the Ecuadorian government after earthquake, elaborated the first plan. The Ecuadorian Ministry of Urban Development and Housing (MIDUVI) produced the second plan. The Municipality of Portoviejo based on an urban analysis done by the Danish consulting firm Gehl Architects is the author of the third plan. A qualitative analysis based on structured interviews done via email to the authors of the Indicative Plan of Urban Development for Portoviejo and to employees of the Public Works Department of the Municipality of Portoviejo reinforced the findings obtained with the plans that were previously mentioned. Opinions of merchants, local professionals, members of civil associations and citizens about the Urban Regeneration Plan complemented the information obtained from the interviews. These opinions were collected from newspapers articles, reports of civic meetings and social media platforms.

A limitation of this analysis is that all the secondary data used for this study was collected, analyzed and interpreted only by the author of this document. The use of interviews for the qualitative analysis represents another limitation because generally interviewees only give perceptions and opinions that they are prepared to reveal. Therefore, the information gathered from the interviews might be subjective. The small amount of replies to the structured interviews sent via email to the employees of the municipality and to the authors of the plans was the third limitation that this thesis encountered.

3 CASE STUDY

3.1 2016 Ecuador earthquake

On April 16, 2016, a magnitude 7.8Mw earthquake struck the coastal region of Ecuador. Official reports affirm that 671 people were killed and more than 35,000 homes were destroyed or damaged. In the two most affected provinces, Manabí and Esmeraldas, the earthquake affected more than one million people directly or indirectly. To overcome this situation, on April 17, Ecuador made a request for international assistance and created the Technical Secretariat for Reconstruction (*Secretaría Técnica del Comité de Reconstrucción y Reactivación Productiva*). This government entity launched the National Reconstruction Plan “*Plan RECONSTRUYO Ecuador*”, which divided the recovery process in three phases: demolition, reconstruction and reactivation. A government report issued on May 30, 2018 mentions that 2876 million USD were collected after the earthquake for emergency, reconstruction and reactivation purposes (Figure 1). The money assigned for the reconstruction phase was almost 75% of the total

budget and it was allocated for projects related to higher education, electricity supply, water and sanitation, education, health, housing, and roads (Figure 2).

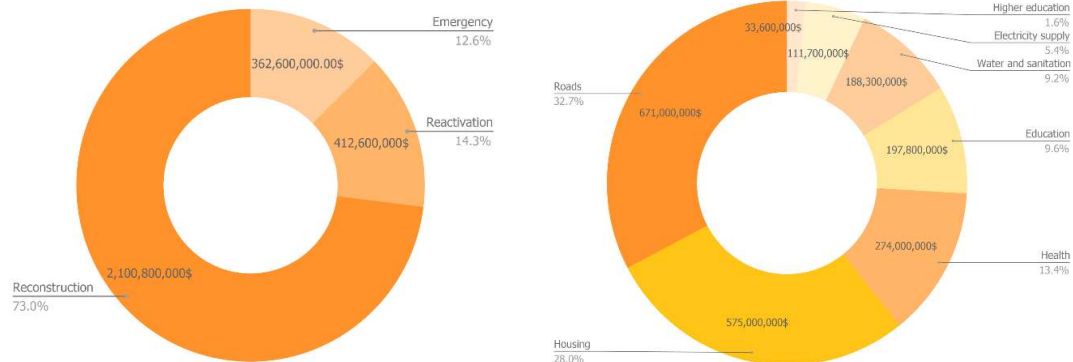


Figure 1. Post-disaster money distribution

Figure 2. Reconstruction money distribution

Elaborated by the author and based on the official report *Infografía Eje Reconstrucción* (May 30, 2018)

3.2 Portoviejo, Ecuador

Portoviejo, capital of the Province of Manabí, is a coastal city located in the eastern part of Ecuador (Figure 3). With a population of 223,086 inhabitants, it was one of the most affected cities by the 2016 earthquake. The city covers an area of 954.9 km² and it is formed by 221 blocks; 52 of them configure the city center, area where administrative and commercial services used to be centralized (Figure 4). According to the 2010 Census, 41.2% of its urban population (77,515 people) is economically active (Figure 5), 32.5% of them are private employees and almost 25% are self-employed (Figure 6). Statistics show that the economy of Portoviejo relies on the tertiary sector (Figure 7) and that retail and wholesale are the activities done with more frequency among the persons occupied in this economic sector (Figure 8). These results confirm the important role that plays the formal and informal commercial activity in the economy of Portoviejo (Figure 9).

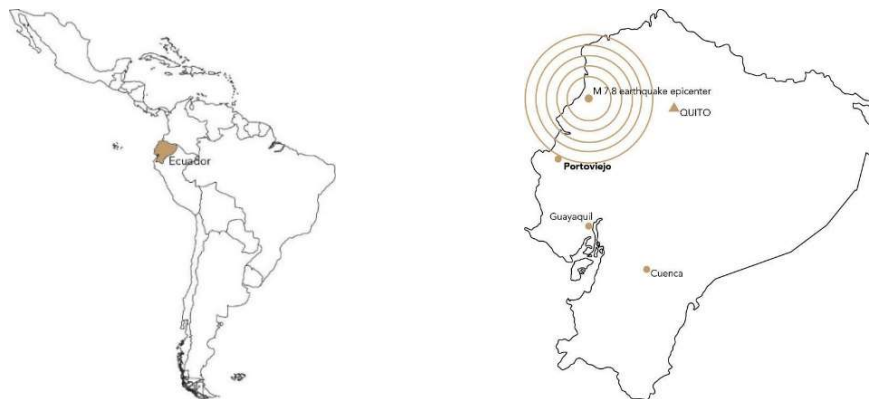


Figure 3 (a, b). Ecuador, Latin America; Portoviejo, Ecuador / Elaborated by the author

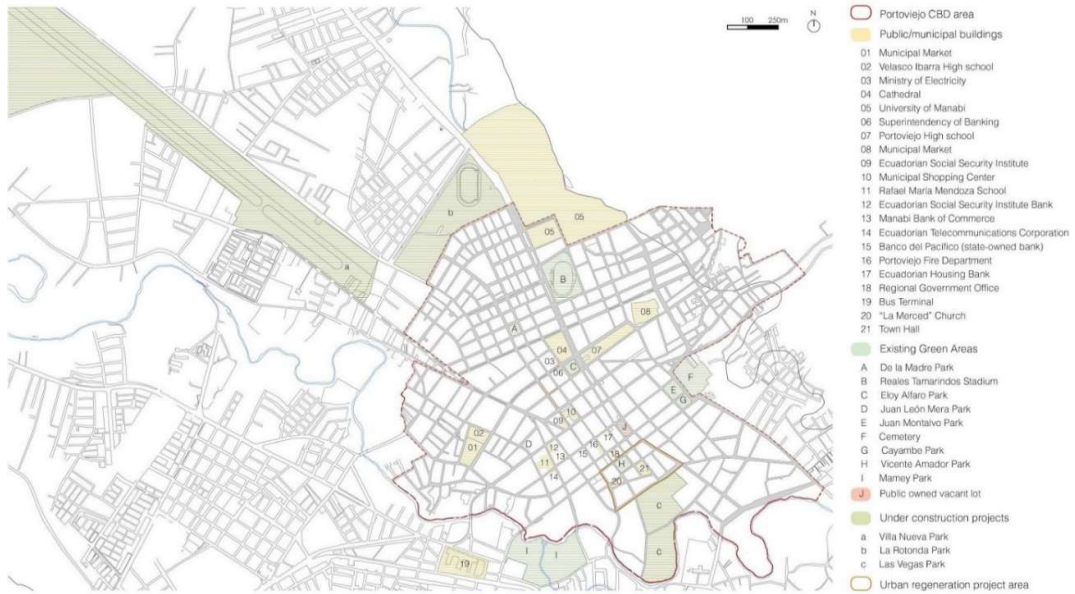


Figure 4. Portoviejo and its CBD area / Elaborated by the author

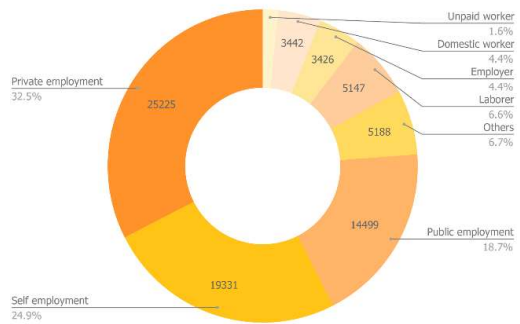
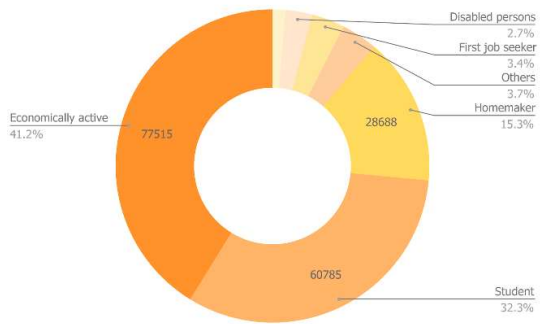


Figure 5. Portoviejo, economic activities types

Figure 6. Portoviejo, employment and employee types

Elaborated by the author and based on data of the Ecuadorian Population and Housing Census 2010

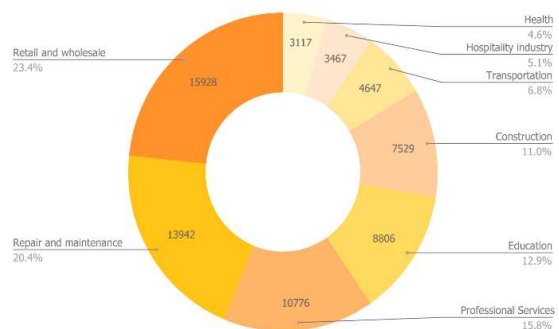
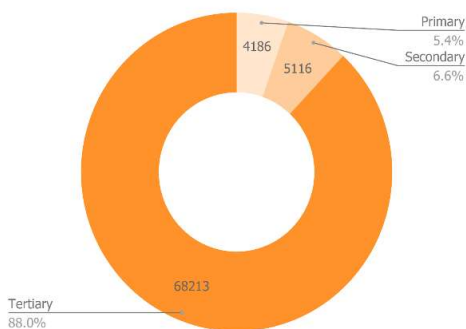


Figure 7. Portoviejo, sectors of the economy

Figure 8. Portoviejo, tertiary sector activities

Elaborated by the author and based on data of the Ecuadorian Population and Housing Census 2010

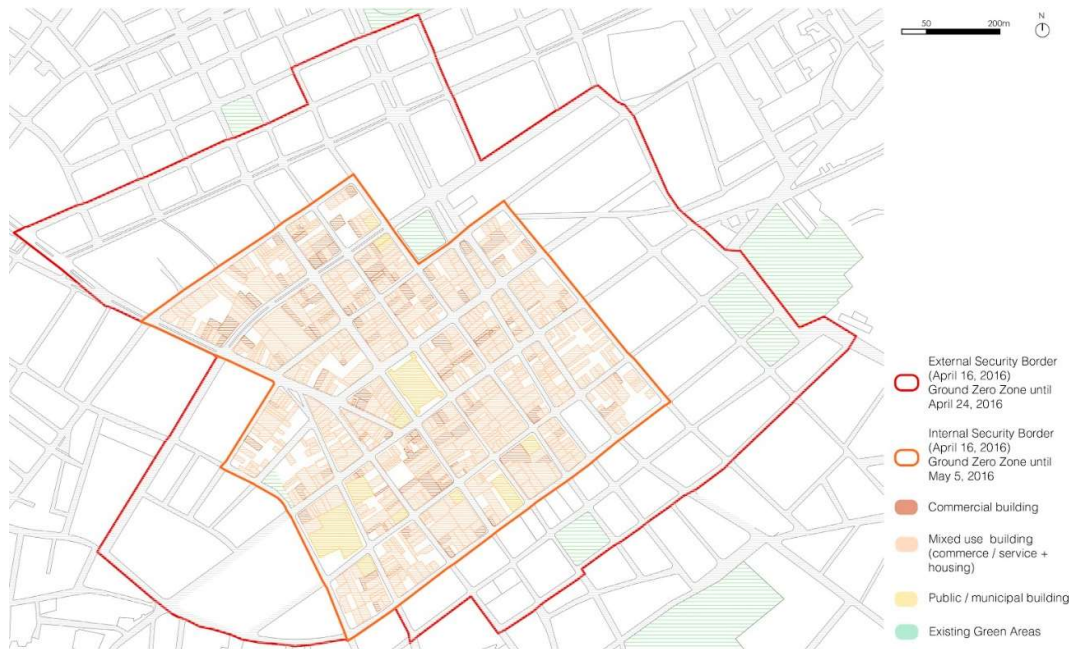


Figure 9. 2016 Portoviejo land use map.

Elaborated by the author and based on shape files provided by the Internal Revenue Service of Ecuador

3.3 Impact of the earthquake in Portoviejo

In Portoviejo, the disaster caused 133 casualties, 231 collapsed buildings, 2800 destroyed homes, 635 damaged buildings, 491 buildings at risk of collapse and economic losses valued at 1300 million USD (Milanés & Hidalgo, 2018). Great part of these losses were registered in the city center, where 36% of the buildings collapsed or were severely damaged by the earthquake (Figure 10). The city center was declared Ground Zero and the safety assessment done by the European Union City Protection Team (EUCPT) established internal and external security borders in this area. On another matter, the assessment made to 2365 buildings by the team of the Earthquake Engineering Research Institute (EERI) concluded that the lack of robustness and redundancy in the structures, the heavy and brittle infill walls, the poor quality of materials and deficient construction management systems caused the failure of the structure of these buildings.

Over the past decades, Portoviejo has experienced a process of urban sprawl that has contributed to the decline of its population density from 238 hab./Ha in 1986 to 71 hab./Ha in 2010. This condition has caused the depopulation and the loss of livability of its city center. The reconstruction process of Portoviejo after the 2016 earthquake has aggravated this situation and has increased the urban vulnerability of its city center (Figure 11). The reconstruction plans created for Portoviejo by the Government of Ecuador promoted the creation of new urban centralities to relocate commercial and

administrative services outside the city center and the relocation of the affected families in housing projects in the outskirts of the city. In addition, the Government of Ecuador has failed to provide economic incentives for reconstruction initiatives, situation that has caused the lack of interest of private shareholders to reinvest in the city center.

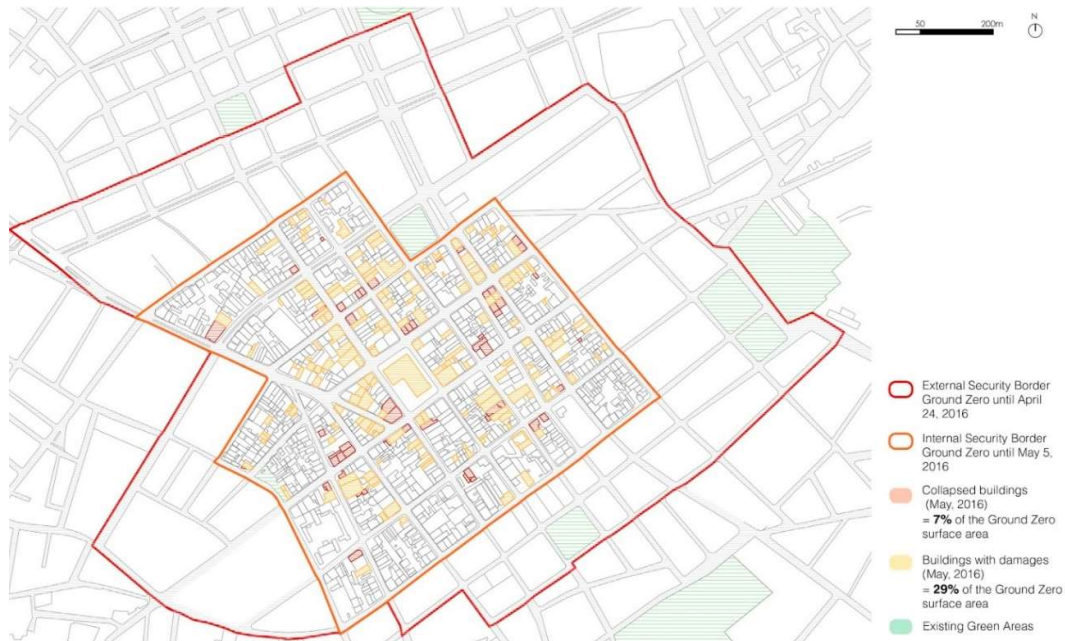


Figure 10. Ground Zero Portoviejo: Collapsed and severely damaged buildings
 Elaborated by the author and based on shape files provided by Military Geographical Institute Ecuador (IGM)



Figure 11 (a, b). Portoviejo city center before and after the earthquake. (February 2015 & August 2017)
 Source 11 (a): <https://www.google.com/maps/>

4 RESULTS

The purpose of this thesis was to define the causes and consequences of disregarding the recovery of the city center in the reconstruction process of Portoviejo, Ecuador. The specific questions addressed in this thesis were: why the city center of Portoviejo was left unattended in the reconstruction process? and why new centralities were created to relocate commercial and administrative services outside the city center? To answer these questions, the National Plan and the Indicative Plan of Urban Development for

Portoviejo created by the Government of Ecuador and the Urban Regeneration Plan of Portoviejo created by the Municipality of Portoviejo were reviewed.

4.1 National Reconstruction Plan “*Plan RECONSTRUYO*”

On April 26, 2016, the Ecuadorian government created the Committee of Reconstruction and Production Reactivation. The role of this state entity was to implement plans, programs and policies to mitigate the effects of the earthquake. The National Reconstruction Plan was created by this entity to provide guidelines to governmental institutions and municipalities on how to intervene in the affected areas during the phases of emergency, reconstruction and production reactivation. The plan set guidelines in three axes of action: financing, urban planning, and housing.

Financing: The Government of Ecuador granted access to credits to local governments and to the affected population through three public financial institutions: National Financial Corporation (CFN), Ban Ecuador and the Cooperation of Public and Solidarity Fund (CONAFIPS).

Urban Planning and Regeneration: The Government of Ecuador developed four urban planning guidelines for reconstruction scenarios:

- Plan and support urban regeneration projects that promote a sustainable urban development and that address the needs of the affected populations.
- Increase the competences of local governments and municipalities related to urban development programs.
- Promote the implementation of the Ecuadorian Building Code among the municipalities, universities and citizens in general.
- Build new urban complexes (new centralities) outside the city center to relocate the services of governmental entities, whose buildings were affected by the earthquake.

Housing: The Ministry of Social Development (MIES) and the Ministry of Housing (MIDUVI) promoted the allocation of bonds for the reconstruction of homes and the recovery of livelihoods of the affected population. They offered bonds for: 1) Refurbishment of houses (bond loan: 4,000 USD), 2) Total reconstruction in own private land (bond loan: 10,000 USD), 3) Purchase or construction of dwellings with a cost up to 70,000 USD (bond loan: 9,000 USD) and 4) Purchase of houses in public housing projects (bond loan: 10,000 USD). In all the cases, the beneficiary was obliged to pay back 10% of the amount of money received in a period of 48 months.

Until May 2018, the Government of Ecuador invested 575 million USD in the reconstruction, refurbishment and purchase of 45,491 houses (Figure 12). 9.7% of this money was allocated in the construction of 4392 houses in 22 public housing complexes built by the Government of Ecuador in 13 different cities (Figure 13).

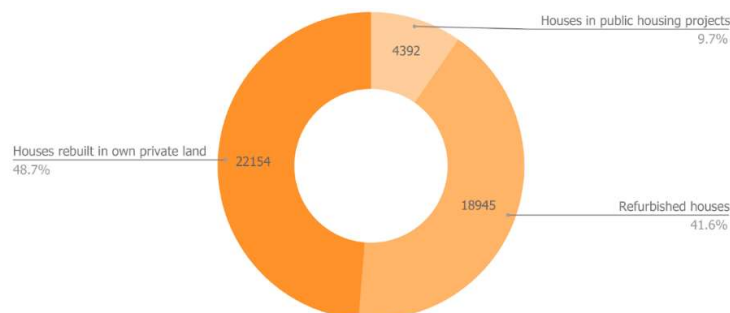


Figure 12. Bond loans types for housing projects

Elaborated by the author and based on the Plan *RECONSTRUYO* Ecuador (April 15, 2017 report)

City	Project	Houses planned	Houses built
Atacames	Atacames		116
Quinindé	Nuevo Quinindé	140	120
Babahoyo	Brisas del Río	236	236
Jaramijó	Nuevo Jaramijó	282	238
Portoviejo	El Guabito	608	320
Chone	San Cayetano	468	352
Manta	Si mi Casa	404	587
Santo Domingo	Plan Piloto		40
	Ciudad Verde	200	100
San Vicente	Canoa	56	108
	San Vicente	266	180
Sucre	San Isidro		26
	Acuarela II	168	168
Pedernales	Cristo el Consuelo	350	260
	Nueva Chorrera	250	164
	Ciudad Jardín	1200	368
Jama	Punta del Mico	100	
	Jama Centro		64
	Don Juan		70
Muisne	El Matal	366	175
	Portete	132	80
	Muisne III	1000	300
	Nueva Chamanga	800	320
Total		7026	4392

Figure 13. Public Housing Projects built by the Government of Ecuador after the 2016 earthquake

Elaborated by the author and based on the *Plan RECONSTRUYO Ecuador Informe Trimestral* (May-August 2016 report) and on the *Plan RECONSTRUYO Ecuador* (May 2017 report)

4.2 Indicative Plan of Urban Development for Portoviejo (PIDU)

An Indicative Plan, according to the Ecuadorian Land-Use Act (*Ley Orgánica de Ordenamiento Territorial*), is a tool that summaries and organizes plans, assessments and projects proposed by different public entities in one document in order to develop

strategic guidelines and promote urban planning inputs. After the 2016 earthquake, the Ministry of Urban Development and Housing (MIDUVI) in collaboration with experts from Chile and Spain developed Indicative Plans of Urban Development (PIDU) for Portoviejo, Pedernales, Bahía de Caráquez, Canoa, Matal, Manta, Jaramijó, Jama and San Vicente, eight different cities affected by the earthquake.

Carlos Yerovi, author of the PIDU for Portoviejo, claims that this plan is an assessment tool that puts together information described in the National Reconstruction Plan created by the Government of Ecuador, the Land Use Plan of the Municipality of Portoviejo and the post-disaster assessment done by the MIDUVI. The information provided by the PIDU addresses issues related to housing, public spaces and infrastructure and recovery of the commercial activity.

Housing: The Indicative Plan for Portoviejo describes briefly the public housing project *El Guabito* (Figure 14), which is the only public housing project built in Portoviejo after the earthquake by the Government of Ecuador. It is located in the southern part of the city about 4 kilometers from the city center (Figure 15). The whole project has an area of 51,962 square meters and accommodates 320 families; however, at initial stages, it was contemplated the construction of 608 houses. According to official reports, the whole project had a cost of 11 million USD and each 40 square meters department, which is equipped with two bedrooms, a living room, a dining room, a kitchen and bathroom, had a cost of 10,000 USD. The first 100 houses were finished in November 2016 and the whole project was completed in May 2017. According to data provided by the MIDUVI, the beneficiaries of these houses were the families that were living in the temporary shelters set by the government after the event. The allocation of the houses and the selection of the beneficiaries took more than six months. Reports from newspapers and social platforms claim that an important amount of the affected population did not benefit from any type of housing solution or economic incentive. In fact, the post-disaster assessment of Portoviejo established that 2800 homes were destroyed; this means that *El Guabito* only addressed the need of accommodation of less than 12% of the affected population.

Public spaces and infrastructure: The PIDU states that the partial destruction of the city center of Portoviejo is an opportunity to relocate public services outside the city center and create new centralities for commercial, administrative and recreational services in different parts of the city. The plan claims that these new centralities should be connected with the existing public spaces and with a new public transportation system in order to create an integrated urban network. In addition, this plan emphasizes the need to rethink and redesign public spaces to increase the green area per capita in the city

and decrease the risk perception in public spaces. Even though the plan sets many guidelines, it only specifies few projects including the design of plazas for the plots where the Social Security Bank, the Municipal Shopping Center and the Social Security Institute used to be located, *5 de Junio Park*, and *Granda Centeno Park* (Figure 15).

Commercial activity: The PIDU states that Portoviejo is not a commercial city, but a city of informal commerce. Therefore, this plan argues that the reconstruction process is an opportunity to create new centralities for commercial activities to relocate and provide job stability to informal merchants. The plan claims that it is important to create new trading centers, enhance the existing ones and create with them an urban commercial network. Even though the plan sets these guidelines, it does not specify any project to materialize these ideas, because as it was mentioned, the PIDU is an indicative plan that gives guidelines without specifying mechanisms to apply them.



Figure 14 (a, b). “*El Guabito*” Public Housing Project.

Sources: 14 (a): <https://twitter.com/abSimonDaza/status/911732636292456448>
14 (b): <https://twitter.com/hashtag/guabito>

4.3 Urban Regeneration Plan for Portoviejo

Before the earthquake, the Municipality of Portoviejo commissioned to the architecture studio Lopez-Lopez Arquitectos an urban plan. Furthermore, after the earthquake, the municipality hired the Ecuadorian architect Gustavo Gonzalez and the Danish studio Gehl Architects to develop a Public Space Study (Figure 16) to incorporate the results of this analysis to the proposal done by Lopez-Lopez Arquitectos and create an Urban Regeneration Plan for Portoviejo. The main objective of this plan was the enhancement of the city center through the improvement of its public spaces and pedestrian area. This plan sought to reduce the area for vehicles from 2.2 to 1.2 hectares, and as a result, the increase of pedestrian area from 1.2 to 2.4 hectares. It also aimed to plant 300 trees, bury 124 000 meters of electric cables, supply urban furniture and public lighting and install 2000 meters of rain sewer pipes and 1270 meters of sanitary sewer pipes. The first phase of this plan involved the intervention of 11 blocks and it was inaugurated on

July 14, 2018. The second phase started in August 2018 and it is being implemented in 9 more blocks. (Figure 17).

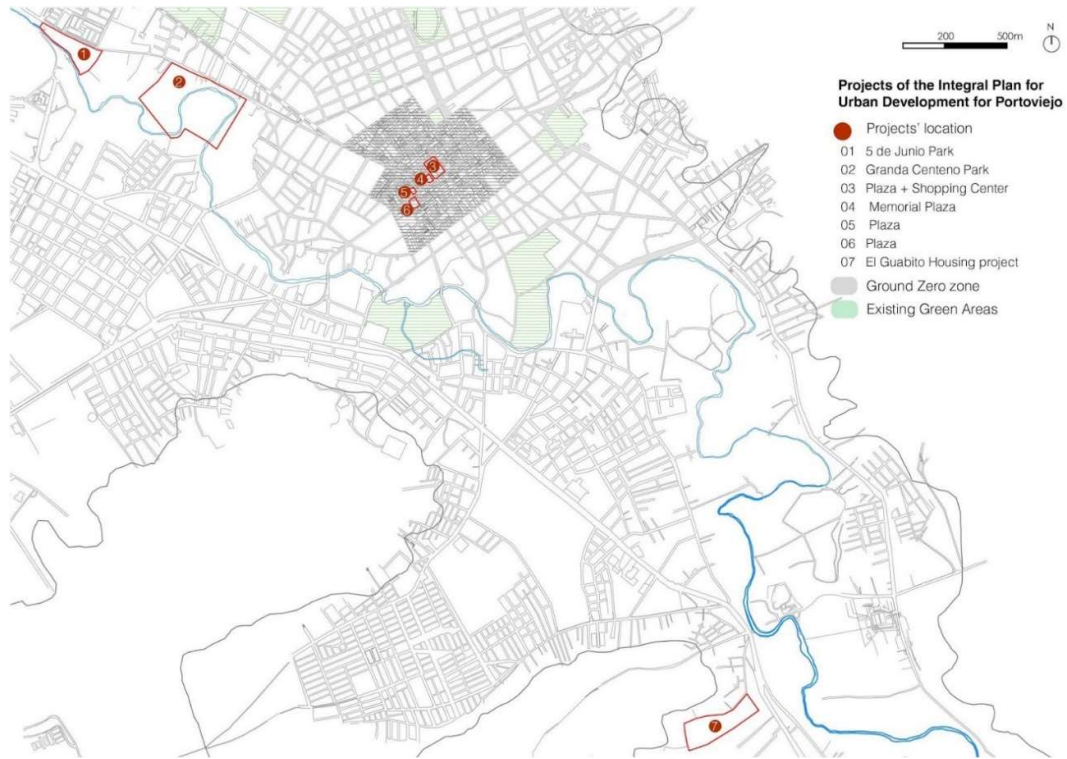


Figure 15. Projects proposed by the MIDUVI in the PIDU for Portoviejo / Elaborated by the author

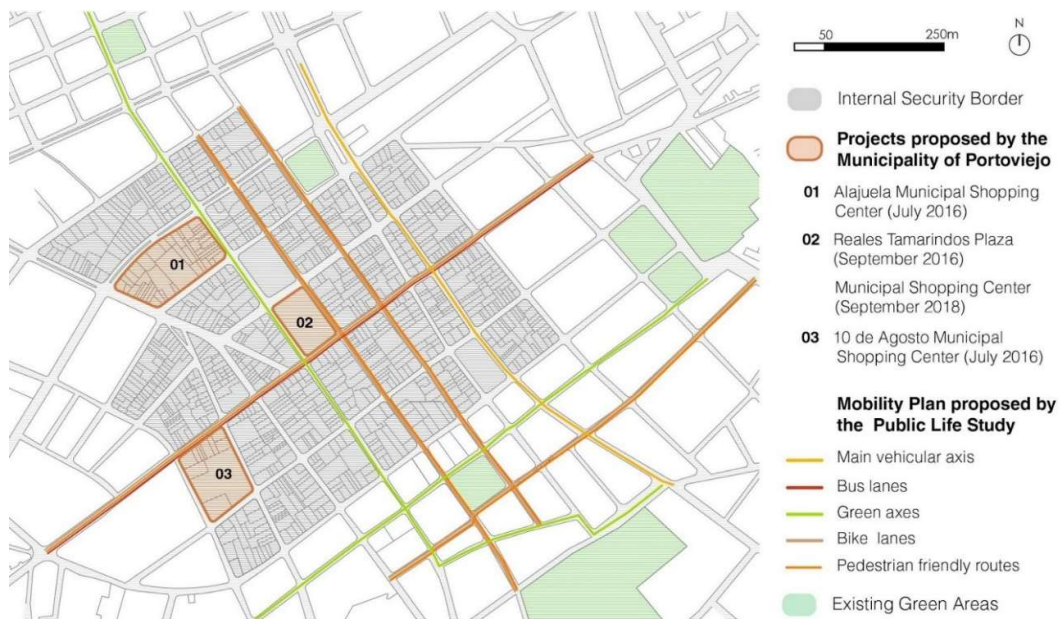


Figure 16. Projects promoted by the Municipality of Portoviejo in the Urban Regeneration Plan for Portoviejo / Elaborated by the author and based on the Public Space Study done by Gehl Architects.



Figure 17 (a,b). Portoviejo city center before and after the Urban Regeneration Plan (Feb 2015 & Oct. 2018)

Sources: 17 (a): <https://www.google.com/maps/>

17 (b): <http://lopezlopezarquitectos.com/wp-content/uploads/2018/10/IMG-20180929-WA0007.jpg>

4.4 Relocation after the earthquake

Public institutions like the Ministry of Electricity, the Superintendence of Banking, the Ecuadorian Social Security Bank (BIESS), the Manabí Bank of Commerce, the Municipal Shopping Center, the Ecuadorian Social Security Institute (IESS) and the Portoviejo Fire Department were relocated out of the city center after the earthquake (Figure 18). For instance, the Ministry of Electricity was relocated in the Customer Service Center building situated in the *Campus del Milenio* (Figure 19), which is the new centrality built in Portoviejo after the earthquake that hosts 650 employees of 25 different public institutions. This urban complex of 3000m² located 3 kilometers from the city center hosts commercial, public, recreational and administrative services.

The Municipal Shopping Center (Figure 20) located in the heart of the city center used to be an urban landmark and an economic hub for Portoviejo. After the earthquake, it was demolished and the new use for its plot has had contradictory approaches. The Municipality based on the study done by Gehl architects claims that this plot needs to become a plaza in order to give the city a new meeting point. On the other hand, the citizens of Portoviejo demand a project that recovers the commercial activity of this area. Some merchants that used to have their retail shops in this shopping center have been relocated in provisional stalls of 4 m² along Alajuela Street in the city center of Portoviejo. Others have been relocated in the central plaza of Picoaza, a town located 7km away from Portoviejo (Figure 18). In order to give a permanent solution to the merchants, the municipality has mentioned its interest to build two shopping centers (Figure 16). However, this possibility has caused concern among the citizens because their construction will cause the expropriation of several private plots.

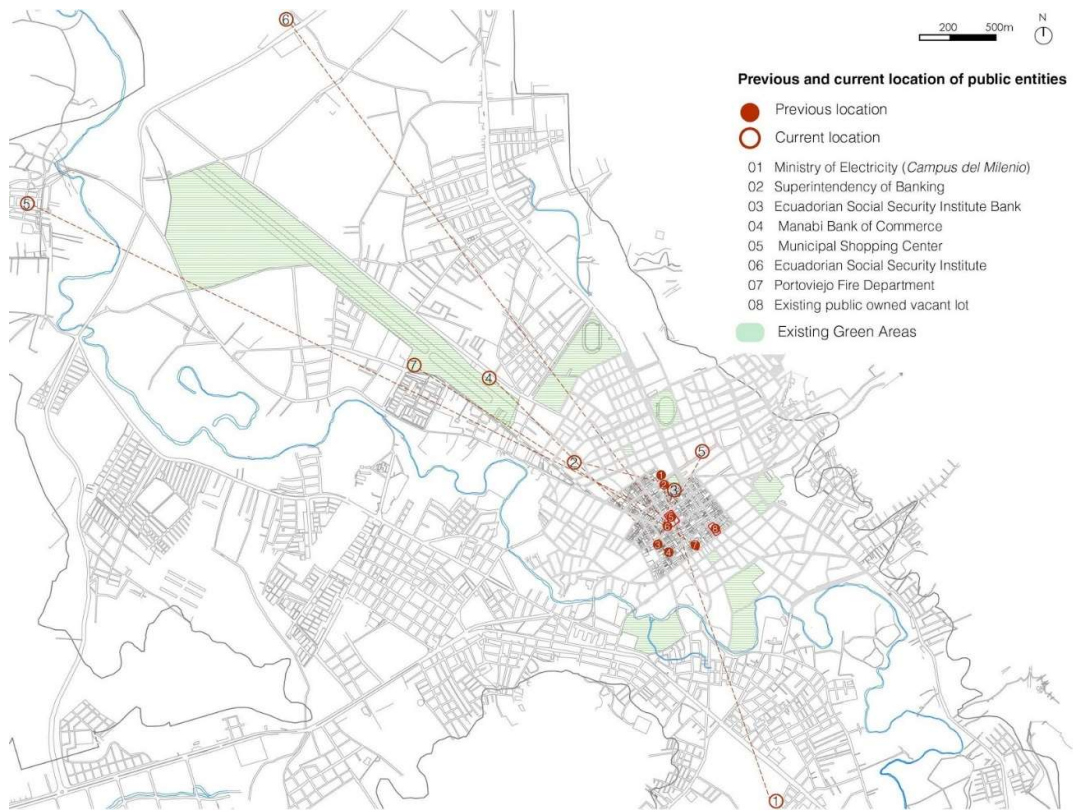


Figure 18. Relocation of public entities / Elaborated by the author



Figure 19. *Campus del Milenio* Master Plan
 Source: <https://pt.slideshare.net/PresidenciaEc/3-plan-masa-portoviejo/2>



Figure 20 (a, b). Municipal Shopping Center before and after the earthquake (Feb 2015 & Jan 2018)
 Source 20 (a): <https://www.google.com/maps/>

4.5 Shortcomings and discrepancies

Guidelines, projects and shortcomings of the National Reconstruction Plan, the Indicative Plan of Urban Development for Portoviejo and the Urban Regeneration Plan for Portoviejo were summarized in Figure 21. This outline portrays the lack of coordination between national and local plans and the inconsistency between the plans themselves and their implementation. On the one hand, the National Reconstruction Plan and the PIDU for Portoviejo, plans created by governmental entities, promote the creation of new centralities for commercial, public and recreational services and exclude the intervention of the city center from their scopes. On the other hand, the Urban Regeneration Plan created by the Municipality of Portoviejo promotes the enhancement of the city center through the improvement of its public spaces and pedestrian area. This plan does not incorporate a reconstruction approach in its urban regeneration goals.

The case study of the reconstruction process of Portoviejo reveals some discrepancies between the plans and their implementation. For instance, the guideline of the National Reconstruction Plan talks about the importance to provide different housing options to the affected families; however, *El Guabito* was the only housing project built by the Government of Ecuador in Portoviejo after the earthquake. The Plan of Urban Development for Portoviejo has the shortcoming of being an indicative plan that delivers guidelines, but fails to provide specific methods to apply them. In addition, this plan just like the National Reconstruction plan overlooked the reconstruction of the city center. On the contrary, the Urban Regeneration Plan created by the Municipality put the city center in the core of its guidelines. However, the projects built by the Municipality of Portoviejo after earthquake have focused only in the improvements of sidewalks, streets and plazas disregarding the possibility to implement projects that address the depopulation of the city center and the recovery of its commercial activity.

The interviews done to the authors of the Indicative Plan of Urban Development and to the employees of the Municipality of Portoviejo confirmed the existence of contradictory approaches between state and municipal plans and the lack of coordination between national and local agencies. In fact, the employees of the Municipality claimed that they ignore the existence of the Indicative Plan of Urban Development for Portoviejo created by the MIDUVI. Nevertheless, all the interviewees agreed that the creation of the new centralities for commercial, public and recreational services has severely affected the urban planning of the city and has compromised the livability of the city center. Finally, this qualitative analysis also corroborated the failure of the municipality to incorporate a reconstruction approach in the urban regeneration plan. The opinions of the citizens towards this plan that were collected from newspaper articles, reports of civic

meeting and social media, showed their concern and discontent. They claimed that this plan failed to provide effective actions to address the depopulation of the city center, the loss of the commercial activity and the precarious situation of the informal merchants.

PLAN	MAIN GUIDELINES	PROJECTS	SHORTCOMINGS
National Reconstruction Plan (Government of Ecuador)	<ul style="list-style-type: none"> - Move public institutions from the city center to new urban centralities. - Allocate bonds to the affected families for refurbishment, reconstruction and purchase of houses. 	<ul style="list-style-type: none"> - <i>Campus del Milenio</i>: new centrality built to host commercial, public and recreational services. - <i>El Guabito</i>: the only public housing project built in Portoviejo after the earthquake. 	<ul style="list-style-type: none"> - The plan does not incorporate the city center in its guidelines. - It talks about four types of bonds, but official reports only provide information about the public housing projects.
Indicative Plan of Urban Development for Portoviejo (Government of Ecuador)	<ul style="list-style-type: none"> - Build new centralities to relocate public services. - Make new shopping centers outside the city center to relocate informal merchants. 	<ul style="list-style-type: none"> - The plan gives a draft of the design of the parks 5 de Junio and <i>Granda Centeno</i>. - The plan provides designs for the plots where used to be located the Municipal Shopping Center, the BIESS and the IESS. 	<ul style="list-style-type: none"> - This Indicative Plan is an assessment tool that does not give specific actions to materialize its guidelines. - This plan also fails to incorporate the reconstruction of city center in its guidelines.
Urban Regeneration Plan (Municipality of Portoviejo)	<ul style="list-style-type: none"> - Have a more livable city center. - Equip the city center with more public spaces and pedestrian area. - Build new shopping centers in the city center to relocate merchants. 	<ul style="list-style-type: none"> - The Municipality enhanced the city center sidewalks. - The plan proposes a plaza for the Municipal Shopping Center plot. - The Municipality relocated the merchants in stalls along Alajucla Street and in the plaza of a nearby town. 	<ul style="list-style-type: none"> - This plan confronts the challenges of the city only from an urban regeneration perspective and fails to integrate reconstruction actions in its guidelines. - The municipality has not provide permanent relocation solutions to the merchants.

Figure 21. State and municipal plans. Guidelines and proposals for Portoviejo

Elaborated by the author and based on the National Reconstruction Plan “*Plan RECONSTRUYO*”, the PIDU for Portoviejo and the Urban Regeneration Plan for Portoviejo.

5 DISCUSSION

Through the analysis of the plans created after the 2016 earthquake, this thesis studies the causes and consequences of disregarding the recovery of the city center in the reconstruction process of Portoviejo, Ecuador. Bamforth (2017) claims that disruptions tend to exacerbate existing vulnerabilities. In the case study of Portoviejo, the reconstruction process after the 2016 earthquake aggravated the depopulation and the loss of livability of its city center. Situation that Portoviejo has experienced in the last decades due to a process of urban sprawl.

After the earthquake, the Government of Ecuador created plans to reconstruct physical spaces and recover livelihoods as quickly as possible. Even though, many studies assert that this type of responses in many instances are inadequate in economic, social, environmental and social terms (Romero & Albornoz, 2016). The National Plan and the Indicative Plan for Portoviejo created by the Government of Ecuador focused on the construction of new centralities to relocate public institutions outside the city center. They also promoted the relocation of the affected families in *El Guabito*, a housing complex built by the government in the outskirts of the city. These plans failed to promote the endowment of economic incentives for reconstruction initiatives of affected buildings in the city center, decision that discouraged private shareholders to reinvest in this area. These plans did not incorporate the reconstruction of city center in its guidelines and as a result, the implementation of these plans has affected the urban planning of the city and has increased the vulnerability of the city center.

The Government of Ecuador and the Municipality of Portoviejo were involved in the reconstruction process of Portoviejo. The lack of coordination between them and the inconsistencies among their plans affected the reconstruction process of Portoviejo. On the one hand, the Government of Ecuador and its entities were focused on the construction of new centralities and the relocation of housing and public services outside the city center. On the other hand, the Municipality of Portoviejo addressed the recovery process as an opportunity to reinvent the city center with an Urban Regeneration Plan. The plan aimed to regenerate the city center through the improvement of its public space. Even though, this goal sounds ambitious, the Urban Regeneration Plan overlooked problems related to housing, public transportation, informal commerce, among others and only promoted the enhancement of some public spaces. Romero & Albornoz (2016) assert that organizational relationships in recovery actions can be strengthened through the involvement of stakeholders in constant pursuit of a common good from the planning and implementation of projects to the focus on long-term results. However, different examples have shown that setting the involvement of the different stakeholders through

partnerships do not guarantee the implementation of projects that ensure the welfare of the affected community if the affected community is not involved.

Di Gregorio & Pereira (2017) assert that the engagement of the affected population in reconstruction processes gives legitimacy to the solutions and improves their level of organization and awareness. The community engagement in the recovery process after the flood and sediment disasters in Mountain region of Rio de Janeiro, Brazil in 2011 and in the reconstruction process after the earthquake in Mexico in 1985 exemplify this statement. After the flood in Mountain region of Rio de Janeiro, the Government of Brazil focused its efforts on physical recovery, leaving the economic recovery and the restoration of livelihoods unattended. To overcome this situation, in the town of *São José do Vale do Rio Preto*, local entrepreneurs in partnership with the NGO *Cruzada do Menor* created a professional training center. To implement the plan, they worked together with the National Industrial Learning Service (SENAI), the Social Service of Industry (SESI), the Support Service for Micro and Small Enterprises (SEBRAE) and the National Rural Learning Service (SENAR) (Di Gregorio & Pereira, 2017). The damage caused by the earthquake in México City in 1985 devastated its city center and its economic, political, commercial and social activities. In its initial stage, the government focused on the economy recovery and failed to provide housing solutions for low-income families and economic incentives to rebuild the city center. This recovery approach generated general dissatisfaction on the affected families and as a result, they self-organized to demand actions. These social mobilizations brought important changes in the politics of the city including the transformation in property rights and land use policies (Davis, 2005).

The examples of Brazil and Mexico portray how hazards can trigger urban, social and political transformations through the involvement of the affected community in the reconstruction process. Nevertheless, in the reconstruction process of Portoviejo, the actions implemented by the Government of Ecuador followed a top-down approach. On the other hand, the Municipality of Portoviejo tried to incorporate community participation in their projects; however, this participation has remained in participatory actions of informing and consultation. Unfortunately, the engagement of the citizens in the reconstruction process of Portoviejo has not been emblematic and the few initiatives that arose by Community Based Organizations (CBO) like the *CBO Colectivo Ciudadano Unidos por Portoviejo* lacked a real community representation and were not efficient due to the pursuit of their own political agendas.

The reconstruction process of Portoviejo was characterized by the lack of coordination between national and local entities, the failure to address the vulnerabilities

of the city center, the relocation of housing, commercial, and administrative services outside the city center and the lack of community participation in the decision-making process. These conditions have exacerbated the depopulation and the loss of livability of the city center of Portoviejo. Therefore, since this study shows that the efforts of top-down approaches failed to address the vulnerabilities of the city center of Portoviejo, it is necessary to try to address them with a bottom-up approach. One strategy that can be adapted to the reality of Portoviejo is the initiative Flexible Spaces, scheme that promotes the appropriation of vacant spaces to promote urban revitalization in post-disaster contexts. These urban experiments are characterized by the limited duration, temporary use of borrowed land, and a community-driven operation. Even though, they are known for their temporary nature, they have triggered the implementation of permanent changes (Carr et al, 2017). Examples of this initiative were implemented in Christchurch, New Zealand after the 2011 earthquake and in Northeastern Japan after the 2011 earthquake and tsunami.

6 CONCLUSION

The study of the reconstruction process of Portoviejo demonstrates how the lack of coordination between national and local entities, the discrepancies between city planning and reconstruction approaches and the absence of the affected community in the decision-making process have exacerbated the vulnerabilities of its city center. For instance, the decisions made by the Government of Ecuador after the earthquake including the creation of new centralities to remove commercial and administrative services out of the city center and the relocation of the affected families in housing projects in the outskirts of the city ignored the existing vulnerabilities of the city center. On the other hand, the decision of the Municipality of Portoviejo to address the recovery process only from an urban regeneration perspective through the enhancement of public spaces, disregarded the opportunity to use the reconstruction process to address urban and social problems from a holistic approach.

The understanding of the constraints and limitations of the reconstruction process of Portoviejo can help researches and practitioners to create guidelines that strengthen the coordination between the different stakeholders involved in reconstruction processes and to develop strategies that incorporate urban planning approaches in reconstruction processes. This thesis also showed the benefits of community engagement in other reconstruction processes. This, therefore, sets a starting point for further researches related to actions based on social mobilizations and community involvement that might help to tackle social and urban vulnerabilities in reconstruction processes.

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