

# URBAN PERSPECTIVES:

Climate Change, Migration,  
Planning and Financing

A NEW GENERATION OF IDEAS 2017

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Available from:

Urban Sustainability Laboratory  
Woodrow Wilson International Center for Scholars  
One Woodrow Wilson Plaza  
1300 Pennsylvania Avenue NW  
Washington, DC 20004-3027

[www.wilsoncenter.org/usl](http://www.wilsoncenter.org/usl)

ISBN: 978-1-938027-66-6

Cover Photo: Lotus Park informal settlement in Cape Flats,  
South Africa, 2015, courtesy of Jakub Galuszka.

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# Urban Perspectives: A New Generation of Ideas

By the year 2050, 70 percent of the world's population will be urban. With 1.5 million people moving into cities every week, managing urban growth is one of the most important development challenges facing the world today. In an effort to create a global framework to guide sustainable urbanization for the next twenty years, national governments adopted The New Urban Agenda during The United Nations Conference on Housing and Sustainable Urban Development (Habitat III), held in Quito, Ecuador in October 2016. As attention focuses on implementation of the agreement in cities across the world, policy, planning and practice are being shaped to reflect the global urban reality. Evidence-based research, new data and metrics for monitoring progress are critical tools and resources for decision making about urban priorities in order to advance the New Urban Agenda.

Recognizing the need to strengthen the ties between urban policymaking and new scholarly work on urban development, the Wilson Center's Urban Sustainability Laboratory, USAID, the World Bank, IHC Global and Cities Alliance teamed together to cosponsor the annual "Reducing Urban Poverty" paper competition for advanced graduate students. The competition is designed to promote the early career development of young urban researchers, encouraging a new generation of urban scholars, practitioners and policymakers, and to disseminate their innovative ideas.

This publication marks the seventh year of the "Reducing Urban Poverty" paper competition and includes a range of perspectives on urban challenges and policy solutions. The 2016 competition called for papers linked to one of the following subtopics: Cities and Climate Change; Arrival Cities: Responding to Migrants and Refugees; Innovation in Urban

Planning; and, Financing Sustainable Urban Development. To select the winning papers for this publication, a panel of urban experts representing each of the sponsoring institutions reviewed 157 abstract submissions, from which 27 student authors were invited to write a full-length paper. Of these, eight papers were selected to be included in this publication. The chapters in this volume critically examine urban policies and projects, offering original, solutions-oriented research and strategies.

## CHAPTER SUMMARIES

### **Arrival Cities: Responding to Migrants and Refugees**

While not a new phenomenon, current global conflicts are focusing public attention on refugees and migrants, as countries strive to cope with the influx of newcomers. Traditional refugee camps and services are increasingly out of date in today's urban landscape. As policy makers and practitioners alike are struggling with how best to provide assistance to refugees in an urban setting, research must examine current policies and practices and propose new strategies for inclusive urban refugee services.

The first chapter in this volume examines the incremental housing model of the Urban Shelter Program of the Norwegian Refugee Council. The program provides financial assistance for house expansions and interior finishings to homeowners in cities of Northern Jordan in exchange for rent-free accommodation to Syrian refugee families. Authors Francis Goyes, Sera Tolgay and Valeria Vidal combine quantitative and qualitative analysis to explore the benefits of the project, making the case for incremental housing as a shelter strategy for refugees in urban settings.

### **Climate Change**

Cities are at the forefront of grappling with the challenges of climate change and its adverse impacts on the urban poor. Forced to adapt to the realities of a changing climate, urban areas are on the cutting edge of innovation, testing promising solutions that incorporate strategies for building resilience into urban planning and management. Good governance, with coordination across all levels of government and engaged citizens, is essential for making communities safer and more prosperous in the face of climate change.

In their study of the sea defense project in the Ada East District of Ghana, Kwame Owusu-Daaku and Stephen Kofi Diko analyze differences in national, district and community level discourse on climate change adaptation, exploring the implications for policy formulation and implementation. The authors put forth a set of recommendations for improved stakeholder engagement for effective urban climate change adaptation.

Lakshmi Rajagopalan draws from the case of Chennai, India to emphasize the need to integrate climate resilience into urban planning and development policies. Rajagopalan examines key factors that cause flooding, concluding with policy recommendations for increased coordination and integration of strategies and implementation frameworks for land use development and urban flood control.

### **Innovation in Urban Planning**

The New Urban Agenda recognizes that integrated urban and territorial planning can deliver the positive outcomes of urbanization. Urban and spatial planning is a critical tool for addressing urban challenges and building equitable and sustainable cities. Innovative planning systems involve a broad range of stakeholders to develop a common vision for the city.

Jakub Galuszka draws from research conducted in the Philippines and South Africa to analyze the role of evidence-based planning and evaluation regimes in housing policies. His chapter examines large-scale housing programs and co-productive, incremental housing solutions to identify ways that evaluation regimes can block or streamline innovation. Galuszka calls for evaluation measures based on outcome rather than output, with greater consideration for the long-term effects of policies on people's lives and a city's development.

Emily Hall investigates how urban morphological analysis can be used as a tool to assess and develop policy responses to multiple deprivations in data-poor cities of the developing world. Hall presents evidence from Kaduna, Nigeria to examine the variations of deprivations experienced by residents of the city at a disaggregated level using an urban morphological approach.

### **Financing Sustainable Urban Development**

Investment in sustainable urban development is critical for the future of a rapidly urbanizing world. Growing funding gaps will have a significant impact on economic growth and the quality of life in cities. Financing infrastructure

and services for city residents, particularly the urban poor, will be the primary challenge for successful implementation of the New Urban Agenda, demanding clear, innovative, and sustainable financing frameworks.

Devaditya Mukherjee draws from fieldwork conducted in Bhilai Township to examine strategies to leverage public land for public housing development in India. Mukherjee analyzes land leasing policies and surplus land potential, concluding with a set of targeted recommendations for the Township to achieve goals for affordable housing delivery and urban redevelopment.

Yuxiang Luo examines the intricacies of public-private partnership for urban redevelopment in a case study of Dachong Village Redevelopment in Shenzhen, China. The author investigates how local property rights politics and informal social mechanisms affect perceptions and management of risk, exploring the implications for urban policy and market feasibility.

In the final chapter of the volume, Nicolás Valenzuela-Levi examines the impact of social housing policies in Chile on the creation of jobs and access to opportunities. Valenzuela-Levi considers quantitative and qualitative results, assessing public housing production capacity and the quality of location for opportunities to explore the policy implications for housing investment to address poverty.

# Refugees, Incremental Housing and Shelter in the 21st Century

**Francis Goyes, Sera Tolgay and Valeria Vidal**

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## ABSTRACT

*The lack of adequate and affordable rental housing stock to accommodate an increasing number of Syrian refugees has put a strain on the capacity of cities in Northern Jordan, such as Jerash and Irbid. This paper seeks to examine the design and implementation of the incremental housing model of the Urban Shelter Program of the Norwegian Refugee Council (NRC). This program provides financial assistance for house expansions and interior finishings to homeowners in exchange for rent-free accommodation to Syrian refugee families. Through surveys of participant homeowners, semistructured interviews with NRC and UNHCR officers, and mapping of social and public infrastructure, we have found that NRC's Urban Shelter Program increases the total housing stock available in Northern Jordan cities, ensures minimum building standards and quality of materials, and supports the local economy. As opposed to cash-for-rent programs that can add pressure to constricted housing markets, NRC's approach provides adequate shelter for refugees without disrupting existing urban systems.*

## BACKGROUND

In a five-year period, the Syrian war has created an unprecedented refugee crisis, with more than 13 million Syrians internally displaced and an additional 4.5 million fleeing to neighboring countries. In Jordan, 83% of the

more than 520,000 registered Syrian refugees live outside of refugee camps in urban and rural areas, often in substandard and overcrowded shelters without tenure security (NRC 2015a). As urban governance and infrastructure must be able to absorb rapid population influxes and outflows, the humanitarian shelter sector is in need of flexible tools that not only make new housing stock available but also allow this new housing stock to be reused if the displaced population leaves.

Rental support grants are a typical approach to assist refugees by addressing immediate housing needs. In Jordan, UNHCR is coordinating cash-for-rent programs to vulnerable refugee households in urban areas. However, a more structural problem is the shortage of affordable housing stock for rent (3RP 2016). According to the Government of Jordan, “the pre-crisis shortage in affordable housing units combined with high numbers of Syrian refugees” amounted to “a gap of at least 48,600 affordable housing units in 2013 and 2014” (NRC 2015a). Urban densification - either in the form of vertical expansion of existing housing units or in terms of urban infill through the construction of new buildings on vacant plots - is an alternative that both makes more accommodation available and stimulates the housing construction market.

The aim of this paper is to identify best practices from the Urban Shelter Program of the Norwegian Refugee Council (NRC), which provides financial assistance for house expansions and finishings to homeowners in exchange for rent-free accommodation to Syrian refugee families for up to 24 months (NRC 2015b). Building on NRC’s shelter programs for Syrian refugees in Lebanon, this first-of-a-kind program provides an opportunity to discuss and analyze incremental construction and standardization that benefit both homeowners and refugees through the implementation of minimum shelter standards of *The Sphere Handbook Humanitarian Charter and Minimum Standards in Humanitarian Response* in an urban setting (Sphere Project 2011). As conflicts prevail in most areas of the world and a greater number of families are forced to flee their homes, it is imperative to think of how cities will accommodate this population.

### **The Affordability Challenge**

As refugees in the region have limited opportunities for legal employment, they often have to face difficult economic choices between paying

for essential goods and services, like food, education or health, and paying rent. In Jordan, rent is one of the largest household expenditures for Syrian refugees. A December 2014 UNHCR survey on the livelihoods of 1,634 Syrian refugee households in Jordan found that on average monthly rent represented 30.9% of a Syrian refugee household's monthly expenditure (UNCHR 2014). Given that Syrian refugees in Jordan earn an average monthly income of JOD 100 (USD 140) yet pay over JOD 150 (USD 211) in rent, most rely on paying rent out of savings, borrowed money and cash assistance (*ibid.*). With increased numbers falling into debt, Syrian refugee families are vulnerable to the risk of eviction.

Rising rents have exacerbated housing affordability for Syrian refugees in Jordan, who have reported an overall increase of 14% in rental prices across the country between 2013 and 2015, with the majority of refugees paying around JOD 150 (USD 211) per month (NRC 2015b). The Government of Jordan has noted similar trends for Jordanian tenants in some parts of the country (GoJ 2014). In a 2013 assessment, 89% of surveyed Syrian refugee households were recorded to be in debt, with an increase both in the number of indebted households and the amount of debt compared to baseline surveys in 2012 (UNHCR/IRD 2013).

The affordability problem is exacerbated by the fact that a considerable portion of refugee families live in shelters that do not meet adequate housing standards. It is estimated that one in five Syrian refugee households live in units that have leaking roofs or plastic sheets for windows, while half of the units rented by refugee families were affected by mold or moisture (NRC 2015b). This situation leaves Syrian refugee families at risk of developing health complications, such as pneumonia and pulmonary infections, that they may be unable to afford addressing.

### **The Tenure Security Challenge**

In Jordan, a recent NRC study revealed that 70% of Syrian refugees do not have secure tenure, with many households renting without basic rental agreements (NRC 2014). The lack of legally binding agreements leaves families vulnerable to forced eviction and further displacement. The obligation to relocate frequently in an attempt to secure affordable accommodation has crucially impacted Syrian refugee families' ability to maintain legal status, as they are required to update their place of residence on government-issued service cards in order to access local services (NRC 2015b).

An enabling factor for the NRC Urban Shelter Program is Jordan's 1994 Landlords and Tenants Law, where any person, including a refugee, can legally enter into a contract and is protected by its stipulations. Accordingly, NRC's information, counseling, and legal assistance (ICLA) team ensures that a transparent rental document is accepted by both parties and is recognized in a Jordanian court of law, which protects families from arbitrary eviction. This is in stark contrast to the fact that about 10% of Syrian refugees assessed by NRC's shelter programs were under immediate threat of eviction, and 40% of Syrian refugees applying to NRC for shelter support report that they had to move at least three times in the last year (NRC 2015b).

### **Objectives of Research**

The primary aim of this research is to understand how incremental housing can be used as a strategy to supply adequate shelter for refugees in urban areas. Official incremental methods are used primarily by governments and NGOs in social housing programs, commonly referred to as "site and service" projects. However, incremental building is also an organic method of construction in most of the developing world, where families slowly add additional units or floors to their houses with accumulating incomes over time. Although this phenomenon has been well documented for decades, incremental housing for refugee shelter provision is relatively recent.

Through a mixed-methods approach of quantitative and qualitative analysis, this research intends to shed light on the following aspects of incremental housing for refugees and its impacts on urban areas:

- *Incremental housing process* - Understand how NRC's program harnesses this process for the purposes of refugee shelter.
- *Financial assistance for building* - Analyze how homeowners that have participated in NRC's program benefitted from the financial assistance offered for finalizing their house additions.
- *Technical assistance for building* - Learn about the standards and practices used by Jordanian homeowners and the contribution of NRC's technical assistance.

**Figure 1.** Location of Case Study Cities



- *Housing typologies* - Document the spatial configuration patterns in Jordanian houses that are part of NRC's program.
- *Access to public and social infrastructure* - Investigate if houses participating in the Urban Shelter Program have access to essential public and social infrastructure.
- *Recommendations for future assistance* - Envision how NRC's program can be improved to assist a greater portion of the refugee population in Jordan.

## METHODOLOGY

The methodology of this paper is derived from the research of Graham Tipple and MIT's Special Interest Group in Urban Settlement's (SIGUS) framework, which combines quantitative and qualitative research for the purpose of finding patterns on incremental housing building and financing, as well as the socioeconomic impact this may have on urban areas (Tipple 2000; Gattoni et al. 2011). For the purpose of this paper, field research was focused in three Jordanian cities where the NRC Urban Housing Program has been implemented: Irbid, Jerash, and Ajloun, all of which are in close proximity to Jordan's northern border with Syria (Figure 1).

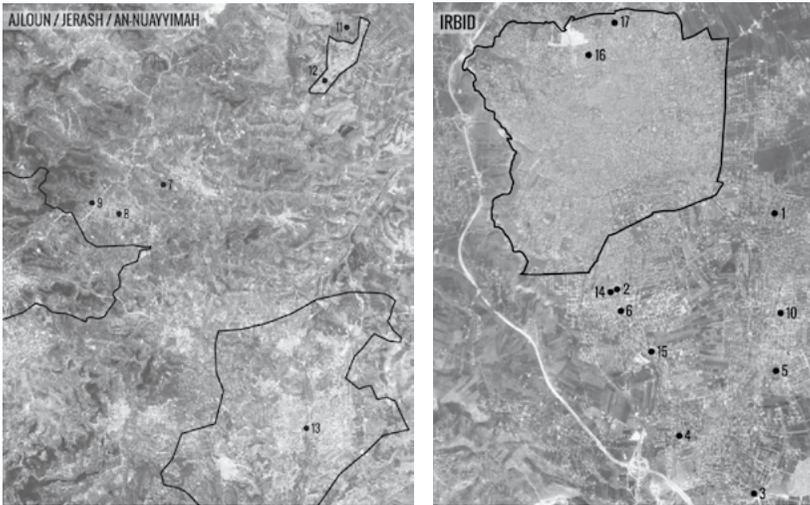
The field data gathered includes surveys with homeowners that have taken part in the NRC program, interviews with shelter officials from NRC and UNHCR Jordan offices, photographs of the program's housing expansions, and mapping of public services and infrastructure accessibility. Semistructured interviews with NRC officials as well as UNHCR's Shelter Program were carried out to understand the collaborative relationship between the humanitarian organization and the government. Additional data was gathered through a literature review on the greater Syrian refugee crisis, as well as NRC's Urban Shelter Program in Jordan and Lebanon. Finally, geospatial analysis was used to understand the progressive impact of this project on urban centers in Jordan.

### **Survey of Users and Incremental Expansions**

A survey method developed by SIGUS specifically to analyze incremental growth of houses was used for homeowners that participated in the NRC program. The resulting surveys are supplemented by photographs and floor-plans of the different case studies we analyzed. We applied a total of seventeen semistructured questionnaires to homeowners who had taken part in NRC's Urban Shelter Program. The survey sample group was chosen by NRC officers, with the purpose of being representative of the greater population of homeowners that had participated in the program (Figures 2 and 3).

## SURVEY RESULTS

NRC provides financial support to Jordanian homeowners who have already built the basic infrastructure and core of the expansion of houses in

**Figures 2 and 3.** Location of Case Studies

order for them to finish the remaining work in a period of two months. This support is contingent on the homeowners providing the spaces built to refugees at no cost for up to two years. Almost 70% percent of respondents indicated they could have financed the expansion without NRC's program; however, the remaining 30% of respondents demonstrate that this program is also able to reach less economically advantaged households.

NRC's financial assistance to Jordanian homeowners for house expansions and finishing has evolved since the inception of the program. In 2013, when the urban shelter program began, NRC's assistance ranged from JOD 1,000 (USD 1,409) per bedroom a year to JOD 1,400 (USD 1,973) per bedroom for a year and half. However, there was little interest from Jordanian residents in building small units, as they did not accommodate the needs of an average Jordanian household. Accordingly, in late 2015 NRC changed their financial incentives for an 18-month rent-free requirement through a tiered system. Since 2013, when the program began, until late 2015 several financial incentives were provided to Jordanian families interested in participating in NRC's Urban Shelter Program (see Table 1).

**Table 1.** Financial Incentives for Jordanian Families

Number of bedrooms	12 month (in JOD)	18 month (in JOD)	24 month (special cases) (in JOD)
1	1000	1400	2000
2	2000	2800	3000
3	3000	4200	
4	4000	5600	

**Table 2.** Perception of Monthly Value of Expansion

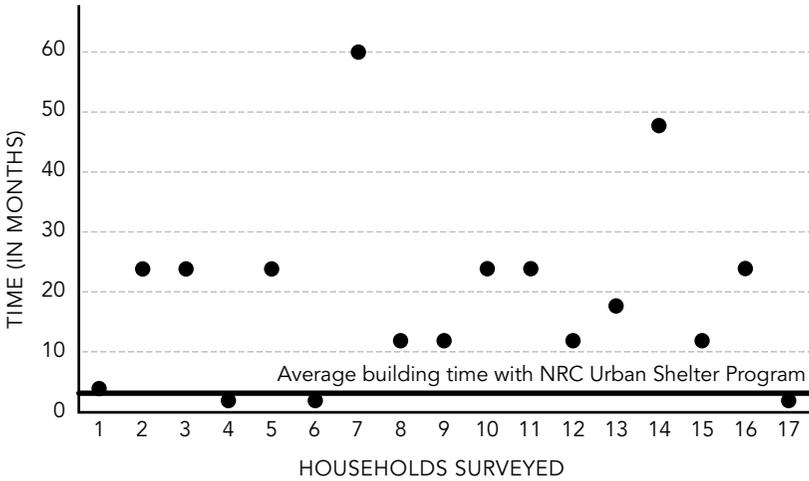
Number of bedrooms	NRC's monthly value (before 2015 on a 12 month contract)	NRC's monthly value (before 2015 on 18 month contract)	NRC's monthly value (before 2015 on a 24 month contract)	NRC's monthly value (since mid-2015 on 18 month contract)	Homeowner's monthly value*
1	\$JD 83.3	\$JD 77.77	\$JD 83.3	\$JD 111.11	JOD 150**
2	\$JD 166.66	\$JD 155.55	\$JD 125	\$JD 166.66	JOD 150–160
3	\$JD 250	\$JD 233.33		\$JD 211.11	JOD 120–250
4	\$JD 333.33	\$311.11		\$JD 233.33	JOD 150–250

\* Values are only representative of answers from 12 surveyed homeowners in Ajloun, Jerash, and Irbid that have units varying in size and quality.

\*\* Only one household with a one-unit bedroom was among the surveyed households.

Taking the aforementioned into account, we analyze how houses are being valued on a monthly basis in order to compare the perception of the value that homeowners assign to expanded units once the contract with NRC expires. In Table 2 we show the percentage of difference (1 to 2%) between NRC's monthly value and the one of the homeowner

Table 1 represents the changes of financial assistance from NRC depending on the length of the contract. In Table 2 these numbers are complemented

**Figure 4.** Time for Housing Completion without NRC

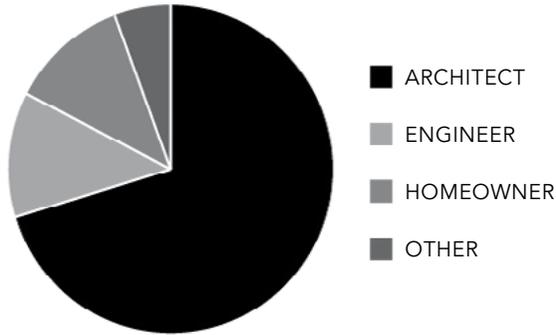
by the homeowner's own perception of value of their expansion. NRC's value of the expansion generally falls within the range of how much homeowners would be willing to charge for these units. Additionally, 70% of homeowners we interviewed would continue to rent the NRC expansions to refugees, while the other 30% would use it for personal means.

NRC's Urban Shelter Program also provides important support to homeowners to reduce the construction time of housing expansions (Figure 4).

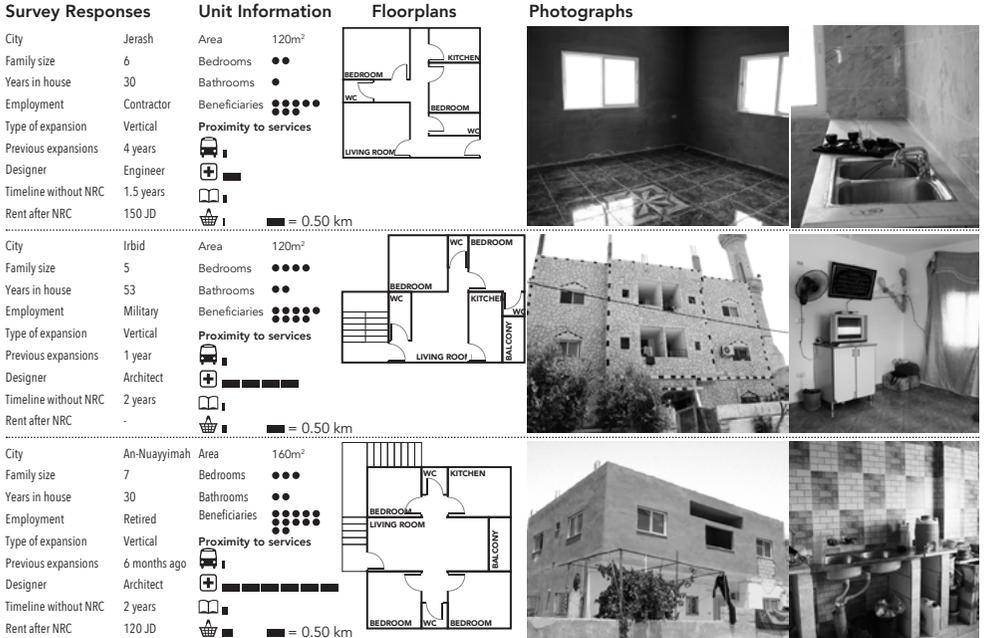
NRC's maximum length of construction time for the Urban Shelter Program is two months, during which homeowners receive technical support from NRC staff. According to the survey results, 88.21% of respondents answered that it would have taken them 1 to 5 years to finish building expansions without NRC's intervention. With the continuous and rapid influx of refugees into Jordan, it is imperative to have programs that can create new housing stock at a continuous fast pace.

The impact of NRC's financial support on the building quality of house expansions is another noteworthy finding from our survey results. In terms of the quality of the house, 50% of the respondents believe that NRC's financial assistance helped further improve the quality of the expansion. Furthermore, 82% of the respondents believed that, retrospectively, the

**Figure 5.** House Designer of Households Interviewed



**Figure 6.** Survey Response Sample



quality of the expansions built was of high or very high quality. This finding emphasizes that NRC's program is able to improve the building material quality, which in the long term improves the sustainability of the built expansion leading to fewer investments for home improvements.

The following data in our survey highlighted the different ways that the NRC Urban Shelter Program supports the local economy during the construction process. Although three people responded that they designed the expansion of the house themselves, the remaining homeowners hired architects or engineers (Figure 5). Additionally, only one respondent indicated that he built the expansion; the rest employed small to medium-size contractors.

### **Homeowner and House Profiles**

Figure 6 is a sample of what our survey included. It gives some information on respondents, the size of the units (which ranged from 80m<sup>2</sup> to 250m<sup>2</sup>) and proximity to basic and social services such as transportation, health centers, schools, and markets. It also features the floor plan of the NRC-sponsored additions, as well as interior and exterior photographs of each house (when available). All the houses surveyed were in close proximity to most basic and social services, the only exception being access to health centers, which in many cases was the furthest away. (See Appendix II for more profiles.)

### **Post-Urban Shelter Program**

In addition to the previously discussed benefits of the program, the survey included questions about expansion usage post-program completion and the amount of rent willing to charge in order to comprehend the impact of NRC's Urban Shelter Program once leases are terminated. The post-use of the expansion space by homeowners were divided into two categories: rent and personal use; 70% of the homeowners reported that they intend to continue renting the space to receive an additional source of income. Homeowners that plan to use expanded units for personal use mentioned that they intend the units to serve as homes for their sons.

More than half of the homeowners expressed that the main reason for expanding their house was due to personal reasons. The other two categories, rent or investment, made up the other 47% of answers. Survey results indicate that the cultural tradition of building an extension for a son and

his future family is an incentive for Jordanian families to participate in the Urban Shelter Program.

For the majority of the respondents, the price they would charge for their property expansion would not change if current Syrian beneficiaries were to continue renting. A couple of homeowners responded that the price of rent charged would be less if the refugees were favorable tenants. Finally, 70% of the respondents expressed a commitment to add further expansions in the future, which suggests that there is a natural disposition towards incremental housing that NRC's program is able to harness for the purposes of refugee shelter provision.

## DISCUSSION AND POLICY IMPLICATIONS

Our investigation has shown that NRC's role as an intermediary between Syrian refugee families, Jordanian homeowners, local governments, and local builders and contractors has established a model for the incremental expansion of existing housing stock to accommodate the influx of the refugee population in Northern Jordan. Through qualitative surveys with homeowners we have identified the following benefits of NRC's Urban Shelter Program for refugees:

- **Quality of housing:** NRC's role as an intermediary ensures that the housing expansions carried out by homeowners are built according to SPHERE habitability guidelines, including at least 3.5m<sup>2</sup> per person, access to water, electricity and structural safety of the building.
- **Tenure security and affordability:** Refugee households can enter into rental agreements and receive rent-free housing for up to 24 months. NRC's legal counseling program facilitates access to remedies in case of the possibility of eviction and helps establish positive relationships and understanding between host families and refugee families.
- **Access to services:** NRC's standards demand houses hosting refugees to be at a maximum distance of 2 km to basic services. With this standard, refugees have better access to local markets, education, health care, public transportation, and other goods and services. All surveyed

households were less than 2 km away from markets, schools, health care facilities and public transportation.

- **Increased demand for local materials, labor, and contractors:** Incremental construction increases the much-needed housing stock in overcrowded cities and contributes to the economy of urban areas by involving local builders, contractors and architects. All but one of the surveyed households worked with local contractors to build the expansions and 14 out of 17 households said they worked with architects to design the expansions. In 2014, 20% of the new private housing units constructed in Irbid Governorate were facilitated by the NRC Urban Shelter Program (NRC 2015b).
- **Urban densification:** By assisting the construction of multistory buildings, NRC’s Urban Shelter Program is a driver of urban densification in cities receiving refugee families. When mapped within the Governorate of Irbid, all surveyed units were built in designated “urban areas” and more than 80% constituted vertical expansion (see Map, “Land Use and Densification in the Governorate of Irbid,” in Appendix III. As the homeowners interviewed in this qualitative survey constitute a very small portion of the total number participating in the NRC Urban Shelter Program, a more detailed mapping with all participating households would indicate whether or not it is contributing to urban densification at scale.

The Urban Shelter Program’s success is based not only on mediation between homeowners and refugee tenants but also continuous oversight throughout the process. Although our surveys have revealed that NRC’s role has established and promoted standards for quality shelters, the program could be revised to accommodate the needs of more beneficiaries.

One aspect of the program that could be revised would be to offer more diverse typologies, such as smaller one-bedroom units for nuclear families. Our survey found that 14 out of 17 units had more than three bedrooms. Although homeowners have full control over the expansion process, with NRC’s oversight, there can be more consultation with refugees to accommodate a wider range of families, such as female-headed households that make up 24% of refugee families in Jerash and Ajloun (NRC 2014). Design

interventions for subdivisions, for example, can accommodate smaller families and help reduce the cost of the program.

At scale, the NRC program would not only increase the stock of housing for rent but also stimulate housing markets through cash-based assistance that has an economic multiplier effect through required construction and building systems services. NRC estimates that across Irbid, Jerash, and Ajloun governorates the Urban Shelter Program meets the shelter needs of 8% of the registered Syrian refugee population (NRC 2015b). Though innovative and successful at its current scale, the deficit of affordable housing in Jordan remains. Nonetheless, through the presence of a functioning construction industry, existence of partially finished buildings that can be upgraded to create additional housing units, and the possibility to explore temporary subdivisions, the program has the potential to be scaled up.

The scale-up and sustainability of the program will also depend on the employment prospects of the refugee population. Although willingness to rent is positive for the larger part of survey respondents, it is vital to understand that the average rental cost is higher than what it is feasible for refugees to pay. According to a case study from the World Bank Group, the average salary of a Jordanian worker is JOD 257 (USD 362) (World Bank Group 2016). Thus, the continuity of the rent contract not only depends on the willingness of the Jordanian homeowners but the affordability for the Syrian refugees.

A recent study showed nine out of ten Syrians outside camps live below the Jordanian poverty line of JOD 68 (USD 87) per capita per month (Rummery 2016). This can be attributed to the fact that refugees are not allowed to work in Jordan. Nonetheless, many find employment in the informal sector of industries like construction and agriculture, which allows them to supplement their income. As of April of this year, the Government of Jordan has put into effect a 90-day grace period that allows employers in the informal sector to freely obtain work permits for Syrian refugees. This will regularize their employment and allow them to work like other migrant workers in the country.

The temporary waiver of fees (which range between USD 170 to USD 1,270 depending on the sector) is an important reprieve for many Syrian refugees who face the risk of working illegally in host countries. For employers, this new grace period also allows them to legalize workers and

avoid steep fines of between USD 280 and USD 2,100, which were imposed previously and led to the closure of many businesses.

Authorities will also allow Syrian refugees to use UNHCR-issued asylum-seeker cards and Jordanian Ministry of Interior identity cards to obtain work permits. Previously, the only way to do so was to use a passport and proof of legal entry into the country. As most Syrian refugees lack both of these, many were precluded from having jobs. Authorities have now removed that requirement, paving the way for thousands more Syrians to be legally employed (Rummary 2016).

In terms of the transferability of the Urban Shelter Program, a motivating factor for Jordanian homeowners to expand their houses is to accommodate their growing families. More than half of respondents said that they wanted to use the expansion for their extended families, while others cited investment and future rent as a motivation. Although these motivations are specific to the cultural context of Jordan, where families prefer to live together in close proximity, transferability to other contexts is still possible given that incremental building is also seen as a sound investment.

Shelter officials from NRC and UNHCR interviewed for this research cited humanitarian standards in urban settings as an urgent need to resolve. A recent innovation in this area has been the SPHERE Project's initiative, Sphere for Urban Response. Since 2016, the SPHERE Project has begun the creation of a new handbook for humanitarian standards in urban settings that takes into account the complex web of systems found in urban environments. When completed, the Sphere for Urban Response Handbook will provide practitioners with a methodology to address the multiple challenges of humanitarian work in urban settlements. This includes identifying urban risks and vulnerability including access to services, building standards, and urban planning, as well as risks of economic shocks from rising food and rental prices (Sphere Project 2011).

As the scale of shelter needs has become a key source of tension within host communities, incremental building schemes like NRC's Urban Shelter Program take into account the effects of intervening in the local housing market, provide proximity to essential services, and work with local communities to ensure programming and oversight for facilitating social cohesion. Given these benefits of shelter provision in urban settings, humanitarian and development actors should prioritize shelter responses in collaboration with host communities.

## CONCLUSIONS

NRC's Urban Shelter Program establishes a legal platform through which homeowners can expand their dwellings. By providing a grant for families to finish their houses, NRC provides a financing mechanism that would have otherwise been inaccessible to low and middle-income households. Through NRC's financing, families are able to build their expansions in a period of two months, instead of an otherwise prolonged period of one to five years. Likewise, engineering and architecture teams from NRC lend technical assistance to families so that housing expansions are designed and built according to Jordanian construction standards and SPHERE humanitarian standards.

Architectural and engineering expansion plans are submitted to the proper municipal authorities and are formally approved by the regulating governmental bodies. This formalization process implies that households can secure legalized documents and the municipal authorities have an updated cadastre for taxing and planning purposes. Furthermore, the NRC Urban Shelter Program increases the affordable housing stock in cities using existing building structures, thus counteracting sprawl and providing proximity to essential services in urban areas. By relying on local architects, engineers, and builders for the incremental construction of the Urban Shelter Program, NRC supports the Jordanian local economy.

Unlike other self-built housing monetary assistance programs, NRC's Urban Shelter Program takes a comprehensive approach to supplying adequate shelter by closely supervising the construction of the expansion, including legal assistance for the rental contract between the homeowner and beneficiary and regular monitoring of the living experience of both parties involved. Likewise, adherence to SPHERE humanitarian standards and NRC selection parameters provide Syrian refugees with access to public transportation and social infrastructure such as educational facilities, markets, health centers, and other goods and services.

UNHCR's recently revised vulnerability assessment framework for shelter underlines the importance of considering both "hardware," criteria related to housing conditions, and "software," criteria related to security of tenure in providing adequate shelter. As opposed to cash-for-rent programs that can add pressure to constricted housing markets, NRC's comprehensive approach physically expands the capacity of existing urban systems and

also combines hardware and software criteria to provide adequate and reliable shelter for refugees.

Finally, by providing financial assistance to Jordanian households and facilitating coexistence between Syrian and Jordanian families, NRC's program helps to defuse some of the tensions growing in host communities. Although more extensive analysis is required to evaluate the long-term impacts of the program, we can conclude that the NRC's Urban Shelter Program increases the total housing stock available in Northern Jordan cities, improves building standards and material quality, supports the local economy and ensures adequate shelter conditions. As conflicts continue to prevail in most areas of the world and a greater number of families are forced to flee their homes, the NRC Urban Shelter Program can be a model for how cities can accommodate these populations.

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## APPENDICES

### I. NRC's Urban Shelter Program

#### Refugee Families



#### Homeowners



## II. Profiles with Photos

### Survey Responses

City Irbid	City Irbid	City Irbid	City Irbid
Family size 10	Family size 5	Family size 3	Family size 10
Years in house 18	Years in house 53	Years in house 25	Years in house 45
Employment Teacher	Employment Military	Employment Engineer	Employment Military
Type of expansion Vertical	Type of expansion Vertical	Type of expansion Vertical	Type of expansion Vertical
Previous expansions 2 years	Previous expansions 1 year	Previous expansions 1.5 years	Previous expansions 2 years
Designer Architect	Designer Architect	Designer Homeowner	Designer Architect
Timeline without NRC 4 months	Timeline without NRC 2 years	Timeline without NRC 2-4 months	Timeline without NRC 2 months
Rent after NRC 150 JD	Rent after NRC -	Rent after NRC 150 JD	Rent after NRC 250 JD

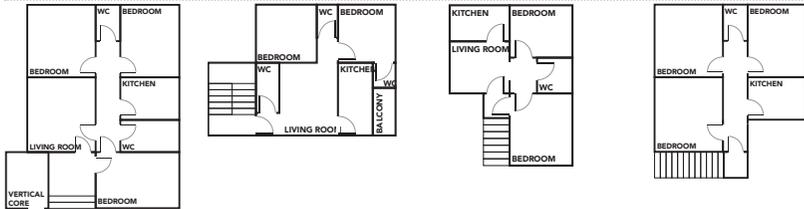
### Basic Unit Information • = one unit

Area 90m <sup>2</sup>	Area 120m <sup>2</sup>	Area 90m <sup>2</sup>	Area 80m <sup>2</sup>
Bedrooms ●●●	Bedrooms ●●●●	Bedrooms ●●	Bedrooms ●●●
Bathrooms ●●	Bathrooms ●●	Bathrooms ●	Bathrooms ●
Beneficiaries ●●●●●	Beneficiaries ●●●●●	Beneficiaries ●●●●●	Beneficiaries ●●●●●

### Proximity to Services ■ = 0.50 km



### Floorplans



### Photos



**Survey Responses**

City Irbid	City Irbid	City An-Nuayyimah	City An-Nuayyimah
Family size 8	Family size 6	Family size 7	Family size 3
Years in house 12	Years in house 8	Years in house 30	Years in house 30
Employment Military	Employment Retired	Employment Retired	Employment Retired
Type of expansion Infill	Type of expansion Infill	Type of expansion Vertical	Type of expansion Vertical
Previous expansions 2 years	Previous expansions 1 year	Previous expansions 6 months ago	Previous expansions 1 year
Designer Architect	Designer Homeowner	Designer Architect	Designer Architect
Timeline without NRC 2 years	Timeline without NRC 2 months	Timeline without NRC 2 years	Timeline without NRC 1 year
Rent after NRC -	Rent after NRC 150 JD	Rent after NRC 120 JD	Rent after NRC 150 JD

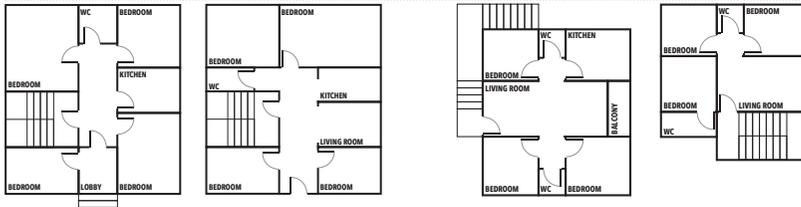
**Basic Unit Information** ● = one unit

Area 200m <sup>2</sup>	Area 250m <sup>2</sup>	Area 160m <sup>2</sup>	Area 90m <sup>2</sup>
Bedrooms ●●●●	Bedrooms ●●●●	Bedrooms ●●●	Bedrooms ●●●
Bathrooms ●	Bathrooms ●	Bathrooms ●●	Bathrooms ●●
Beneficiaries -	Beneficiaries ●●●●	Beneficiaries ●●●●	Beneficiaries ●●●●

**Proximity to Services** ■ = 0.50 km



**Floorplans**



**Photos**



**Survey Responses**

City Jerash	City Irbid	City Irbid	City Irbid
Family size 6	Family size 2	Family size 4	Family size 9
Years in house 30	Years in house 5	Years in house 10	Years in house 8
Employment Contractor	Employment Retired	Employment Air force	Employment Blacksmith
Type of expansion Vertical	Type of expansion Vertical	Type of expansion Vertical	Type of expansion Vertical
Previous expansions 4 years	Previous expansions 1 year	Previous expansions 2 years	Previous expansions 1 year
Designer Engineer	Designer Architect	Designer Bought built	Designer Engineer
Timeline without NRC 1.5 years	Timeline without NRC 4 years	Timeline without NRC 1 year	Timeline without NRC 2 years
Rent after NRC 150 JD	Rent after NRC 160 JD	Rent after NRC 250 JD	Rent after NRC 150 JD

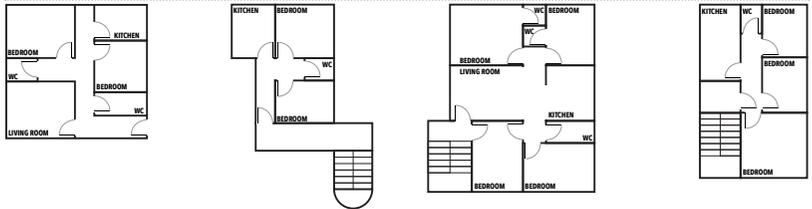
**Basic Unit Information** ● = one unit

Area 120m <sup>2</sup>	Area 90m <sup>2</sup>	Area 100m <sup>2</sup>	Area 90m <sup>2</sup>
Bedrooms ●●	Bedrooms ●●	Bedrooms ●●●●	Bedrooms ●●●
Bathrooms ●	Bathrooms ●	Bathrooms ●●●	Bathrooms ●
Beneficiaries ●●●●	Beneficiaries -	Beneficiaries -	Beneficiaries ●●●●

**Proximity to Services** ■ = 0.50 km

City Jerash	City Irbid	City Irbid	City Irbid
Bus stop ■	Bus stop ■■■■	Bus stop ■■	Bus stop ■■■■
Health center ■	Health center ■■■■	Health center ■■	Health center ■■■■
Library ■	Library ■■	Library ■■	Library ■■■■
Market ■	Market ■■	Market ■■	Market ■■■■

**Floorplans**



**Photos**



### III. Land Use and Densification Plan



# The Sea Defense Project in the Ada East District and its Implications for Climate Change Policy Implementation in Ghana's Peri-Urban Areas<sup>1</sup>

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## ABSTRACT

*This paper calls attention to the need to address climate change challenges in peri-urban areas—which will become the cities of tomorrow—particularly those already highly vulnerable to climate change, such as river deltas. The paper illustrates this need through an analysis of discourses on climate change and coastal erosion, at the national, district, and community levels in Ghana using the case of the sea defense system in the Ada East District. The paper finds an asymmetry of discourses within and between these levels and recommends improved stakeholder engagement for effective future urban climate change adaptation.*

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<sup>1</sup> This research was supported by the Walker Institute of International and Area Studies and the Office of the Vice President for Research at the University of South Carolina, and the Norman E. Borlaug Leadership Enhancement in Agriculture Program (Borlaug LEAP). All views expressed are the authors' and do not reflect the views of the University of South Carolina or Borlaug LEAP.

## INTRODUCTION

Discussions on urban areas and climate change often focus on cities and/or regions excluding peri-urban areas. Peri-urban areas range from territories in rapid transition through fluid and sometimes haphazard processes, to areas with both rural and urban features (Allen 2003). Since villages, small towns, and particularly peri-urban areas, can be viewed as cities of tomorrow (Narain 2010), they need to receive careful attention from researchers and policymakers in analyzing urban vulnerability to climate change and building resilience.<sup>2</sup>

The Ada East District in Ghana, comprising peri-urban areas, is experiencing significant climate change impacts, particularly coastal erosion from sea-level rise (Kusimi and Dika 2012), livelihood degenerations (Nyamedor and Codjoe 2013), and the likelihood of increased saltwater intrusion further inland (Mensah and FitzGibbon 2013). The district (formerly, the Dangme East District) is located in the south-eastern part of Ghana on the coast (see Figure 2), along the border of the Greater Accra and Volta regions. From Ghana's 2010 Population and Housing Census, Ada East's total population was about 93,112 with 53.3% being female and 46.7% being male (Ghana Statistical Service 2012a; 2012b). The district's peri-urban nature is mainly due to its historic past as a colonial trading post and its current status as a tourism destination. The predominant livelihoods of the area are fishing and farming (Ada East District Assembly 2016). Unfortunately, fishing has become highly susceptible to the vagaries of climate due to sea-level rise (Boateng 2010; 2012).

To address this challenge, the Government of Ghana has implemented a sea defense system<sup>3</sup> in the Ada East District in the Volta River Delta (VRD). This sea defense system involves a combination of onshore works, beach reclamation and protective barriers (Asare Boadu 2014; Bollen et al. 2010). Although the project is aimed at curbing the challenges of

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- 2 We view resilience to climate change as an encompassing term to include adaptation, mitigation and sustainable development strategies. In this paper we focus on a single climate change adaptation project and how the project ultimately contributes to climate change resilience.
  - 3 A sea defense system is usually any combination of seawalls, land reclamation technology such as groins, and revetments and roads that are used to protect a coastline from further erosion and flooding.

coastal erosion and sea-level rise in the district, Mensah and FitzGibbon (2013) argue that the sea defense system will increase saltwater intrusion further inland.

Discrepancies between the sea defense system's aim and its potential negative consequences reveal how risks are often perceived differently by government officials and people living at the site of the risk's impact (Müller-Mahn and Everts 2013). Particularly, projects aimed at minimizing climate change impacts by altering the nature of the landscape people reside in usually increase risks for local people—for example, a loss of livelihoods (Barnett et al. 2013)—thereby deepening their poverty situations.

Such asymmetry also raises questions as to the responsiveness of interventions to community perceptions and needs that are critical for community project acceptability, reducing poverty, enhancing livelihoods, and building the needed resilience to climate change impacts. Intervention responsiveness is critical because within any given population, some members can be exposed to different events, and some might experience and/or respond to the same event differently (Carr and Thompson 2014). A focus on perceptions, not just needs, is important for understanding not only the character of the environment, economy, and society in which communities and individuals find themselves but also for understanding how people respond to their perceptions of, rather than objective measures of, the world and its problems (Carr 2013).

Another concern for climate change impacts in the Ada East District is that it is a deltaic region. Like many small towns and peri-urban areas, deltaic regions are often urbanizing areas but differ in terms of their high vulnerability to climate change. Thus ensuring the resilience of these regions is crucial (Ericson et al. 2006; Syvitski and Saito 2007). For one, deltaic regions, such as river deltas, are coastal environments most at risk of sea level rise resulting in coastal erosion and flooding. Besides sea-level rise, there are issues of saline intrusion into low-lying soils, increased flooding from storm surges, and soil subsidence (Foresight 2011; Mensah and FitzGibbon 2013; Wong et al. 2014). Furthermore, the socioeconomic characteristics of deltaic regions (due to their often urbanizing nature), such as high population density, high prevalence of poverty, gender inequalities, and lack of connectivity to major market centers, make them even more vulnerable to climate change impacts (Ericson et al. 2006; Syvitski and Saito 2007; Syvitski et al. 2009). These characteristics make the climate change

vulnerability of people living in deltaic regions a matter of international significance (Foufoula-Georgiou et al. 2011), particularly for people living in peri-urban areas within deltaic regions. As such, these areas will need considerable attention if the urban and development planning community wishes to build the resilience of urban areas against climate change impacts and reduce poverty.

In the Ada East District, the rise in sea level threatens the economic livelihoods of fisherfolk by affecting fish yields, docking stations, and other fishing infrastructure along the coastline. This threat makes this group of people particularly vulnerable to climate change. Losing their economic livelihoods puts them at risk of deepened poverty. However, this vulnerability would be dependent on the extent of climate change impact and how well fisherfolk, and the community as a whole, understand, anticipate, and/or remain resilient to climate change impacts (Daw et al. 2009). Similarly, such vulnerability will also be dependent on how discrepancies in the perceptions of climate change issues and interventions will affect the responsiveness of interventions aimed at building community resilience.

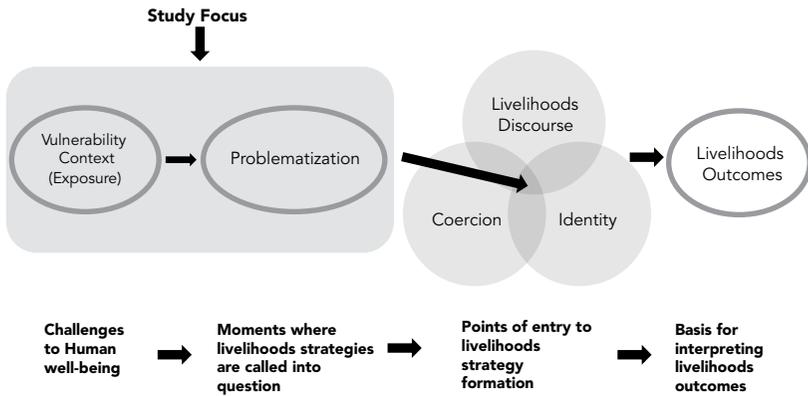
Thus, informed particularly by this latter observation, the thrust of this paper is: How do national and district-level discourses<sup>4</sup> on the importance and impacts of a sea defense system, implemented for the purposes of addressing climate change, differ from the community-level discourses of fisherfolk?

Answers to this question have important implications for policy interventions to tackle poverty and build resilience in areas vulnerable to climate change. If government interventions—especially at the national and district levels—do not match the perceptions and needs of the affected populace, the framings of interventions and proposed benefits will most likely be fraught with challenges in achieving community-level appreciation, acceptability, and/or sustenance in the long run. These challenges will create difficulties for communities and individuals to build resilience to climate change thereby deepening their poverty situations. Thus traversing these challenges is important for effectively implementing responsive climate change actions at the community level and actualizing national and global

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<sup>4</sup> Discourses can be summarily described as ways of thinking, doing or being. This paper focuses on ways of thinking and being as expressed in written texts and verbally.

**Figure 1.** Conceptual Diagram of Livelihoods as Intimate Government (LIG) approach



Source: Adapted from Carr et al. (2015, 10).

policies on climate change (Bulkeley and Betsill 2006; Puppim de Oliveira 2009; Wang 2013).

## METHODOLOGY

### Study Approach

This study used the first two steps of a methodology known as the Livelihoods as Intimate Government (LIG) approach (Carr 2014). This involves a desk study of vulnerability contexts and engagement that actualizes the desk study and identifies relevant livelihoods, social groupings and contradictions shaping climate change vulnerability (Figure 1).

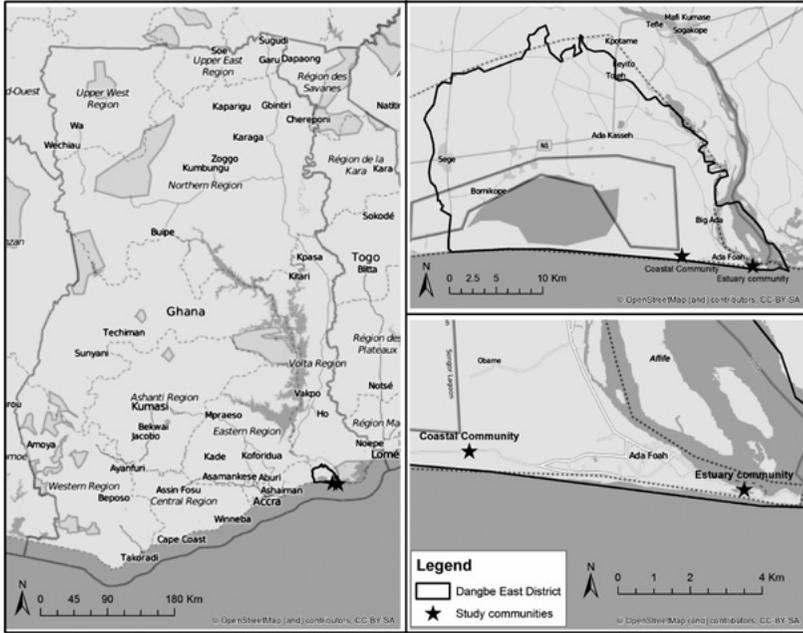
The LIG approach was conceptualized based on an analysis of livelihood decision-making and outcomes from actions that were taking place at the level of individuals within a household. It demonstrates how members of a social unit both constrain and are constrained by the actions of each other and wider societal expectations and discourses concerning how they should behave (Carr 2013); hence the “intimate government” part of the

approach's name. Although this research is a project of "distant government"—government not at the level of a household but traversing the scales of national, district, and community, LIG still presents a useful overall framework. This is because LIG seeks to understand decision-making in the light of competing goals and interests and is rooted in an understanding that livelihoods strategies (or decision-making) are influenced by individuals' framings of the world (Carr 2013, 2014). LIG was also adopted because it allows a researcher to enter a community to ascertain the issues pertinent to people instead of imposing a problem on them. Such a methodology was very useful for identifying whether the community-level discourses matched the national and district level framings of climate change, climate change vulnerability, and sea defense systems in Ghana.

This research employed only the first two stages of LIG because they establish the "what" of the issue (the differing discourses)—which is the goal of this paper. The remaining stages establish the why of the issue (the reasons for these discourses)—explanations of which are beyond the scope of this paper. The desk study on the vulnerability context involved a review of studies on livelihoods, climate change, and environment, and a content analysis of documents that discuss climate change vulnerability in Ghana and the Ada East District. In all the desk study discussions, the aim was to understand whether climate change issues were explicitly mentioned and discussed; if so, how climate change was portrayed, what dire effects of climate change were identified, how the most vulnerable were framed, and the urgency attached to the issues raised. The sea defense system represents the problematization (Figure 1)—an issue upon which different actors disagree—in this research, which the engagement established.

The engagement involved site and participant observations, interviews, and focus group discussions. The study comprised interviews with two national and two district government officials and engaged a total of fifty individuals through seven focus group discussions and two interview sessions in two communities. Out of the fifty people, thirty-six people practiced fishing only, while eight people practiced both fishing and farming. One of these communities was at the estuary of the Volta River; the other was west of the estuary along the coast. Two different communities, together referred to as the Ada Foah Area, were sampled in this study because of the length of the the sea defense system which stretches across different communities in the district (see Figure 2).

**Figure 2.** Location of communities visited in the Ada Foah area in the Ada East District (formerly, the Dangme East District)



Source: Google Maps (2015) and Open Street Map from ESRI (2015).

The system starts at the estuary of the Volta River and extends westward for about 14.7 km (Boadu 2014). At the time the community-level engagement was conducted, the construction of the sea defense system had not yet reached the coastal community included in this study. This situation provided a more holistic picture of the varying perspectives on the sea defense as an adaptation to climate change by garnering the opinions of one community that had been protected by the sea defense system and one that was yet to be protected by the system. The fieldwork portion of this research was carried out in summer 2014 and from September 2015 to March 2016. Table 1 presents the levels of discourses in this study and the data sources.

**Table 1.** Level of discourse and number of data sources for the study

Level of Discourse	No.
<b>National-Level Discourse</b>	
National medium-term development policy frameworks	5
Sector-specific reports on climate change	4
Number of interviews	2
<b>District-Level Discourse</b>	
District Budget	5
District News Reports	17
Number of interviews	2
<b>Community-Level Discourse</b>	
Number of focus groups	7
Number of interviews	2

## UNDERSTANDING THE VULNERABILITY CONTEXT

### National-level Discourses on Climate Change in Ghana

#### *The Progression of the Policy Discourse on Climate Change*

Currently, there are five national development policy frameworks that outline Ghana's national development agenda (NDPC 1995, 2003, 2005, 2010, 2014). These policy frameworks have resulted from long deliberations and consultations with community, district, regional, and national stakeholders. The term "climate change" emerged in these frameworks beginning with the *Growth and Poverty Reduction Strategy (GPRS II)* (NDPC 2005). In earlier frameworks, climate change-related issues, such as deforestation, land degradation, and loss of ecosystem resources (including loss of coastal ecosystems), were considered under the notion of "Environment" and "Environmental and Natural Resource Management."

GPRS II thus marked the beginning of an articulated national discourse on climate change issues in Ghana. The policy framework made

connections with poverty issues such as “vulnerability and exclusion,” and one policy statement focused on climate change—to “deal with the effect of climate change especially drought and desertification: (NDPC 2005, 115). Additionally, in GPRS II, climate change effects were explicitly stated as a challenge—that is the “adverse environmental factors such as climate variability and land/soil degradation continue to be challenges posed to the growth potential of the agricultural sector” (NDPC, 2005, 15). The integration of climate change issues was stronger in the *Ghana Shared Growth and Development Agenda I* (GSGDA). The entire policy framework envisaged “protecting the environment and minimizing the impacts of climate change” (NDPC 2010, 4). Climate change discourse was broader and it was identified as a complex issue with multifaceted impacts on Ghana’s development. GSGDA I also articulated the exigency of critically paying attention to “environmental sustainability as well as [to] determine the impact pathways of climate change and the areas of national vulnerability for appropriate policy interventions” (NDPC 2010, 5). This focus continued in GSGDA II. These two policy frameworks, GSGDA I and II, explicitly identified “climate change” as a key development challenge in Ghana and identified broadly the sectors, occupations, and communities vulnerable to climate change. Also, policy goals, objectives, and strategies adopted the phrase, climate change.

The intensity of climate change issues in Ghana surged in 2009 probably due to the reconstitution of the Ministry of Environment, Science and Technology (MEST), which later became the Ministry of Environment, Science, Technology and Innovation (MESTI) in 2013 (MESTI 2013a). The reconstitution of MEST in 2009 augmented government’s effort towards expanding the climate change discourse in Ghana. The MEST was subsequently “endowed with greater responsibility for coordinating climate change activities across Ministries, Departments and Agencies (MDAs),” and the National Climate Change Committee was formed and strengthened to advise MEST on climate change-related issues in Ghana (Würtenberger et al. 2011, 9). Since the 1990s, Ghana has implemented several climate change-related projects (Würtenberger et al. 2011). However, it was through MEST that Ghana’s efforts towards climate change issues received the much-needed attention. MEST and Ghana’s Environmental Protection Agency (EPA) commissioned several national climate change vulnerability and adaptation assessments (EPA 2008, MEST, 2010, MESTI 2013b). From these

assessments, the government realized that there was a “substantial impact of climate change on the national economy, with clear evidence that many of our key economic assets—the coastal zone, agriculture and water resources—are affected, as well as our social development in terms of poverty reduction, health and women’s livelihoods” (MEST 2010, 18). In effect, the government needed to act swiftly and concisely. So far, this resurgence has resulted in four national documents on climate change—the National Climate Change Policy Framework (NCCPF) and the National Climate Change Adaptation Strategy (NCCAS), which were prepared in 2010; the Ghana National Climate Change Policy (NCCP) published in 2013 (MESTI 2013b) and the National Climate Change Policy Action Programme for Implementation (NCCPAPI) published in 2015 (MESTI 2015).

In these documents, there was a clear recognition that Ghana remains vulnerable to climate change. Although the NCCPF provided a broad direction on how climate change issues will be handled, the NCCAS, NCCP and NCCPAPI provided clear-cut approaches to confront current and anticipated climate change impacts in Ghana. The vision of the NCCP, for instance, is to “ensure a climate-resilient and climate-compatible economy while achieving sustainable development through equitable low-carbon economic growth for Ghana” (MESTI 2013b, 21) by focusing on adaptation, social development and mitigation.

### *The Policy Discourse on Coastal Erosion*

In Ghana’s Vision 2020 policy framework, coastal erosion was presented as the result of “natural causes but exacerbated by such practices as sand winning” (NDPC 1995, vi). Communities such as Accra, Tema, Ada Foah, Keta, Elmina and Sekondi-Takoradi were identified as areas predisposed to coastal erosion. The policy framework also drew attention to a need to invest in sea defense systems to prevent coastal erosion. In GPRS I and II there was no explicit mention of managing coastal erosion.

The issue of coastal erosion was explicit in GSGDA I but was not an issue identified in GSGDA II. In the GSGDA I, the NDPC identified coastal erosion as a key issue under the development focus Marine and Coastal Ecosystems Management. The objective was to “improve investment in control structures and technologies”, such as the Keta Sea defence project, “gabions and boulder revetments to arrest erosion,” and “mangrove replanting and planting of other vegetative cover to delay erosion, e.g., at

Winneba” (NDPC 2010, 154). The NCCPF, NCCAS, and NCCP also emphasized coastal erosion as a challenge. In these documents, sea level rise and coastal erosion and their impacts on settlements were identified as a major climate change issue in Ghana. In effect, coastal erosion was part of the climate change discourse in Ghana and policymakers identified this as needing attention.

### *The Policy Discourse on Sea Defense Systems*

Sea defense systems, one key focus in promoting environmental sustainability in Ghana’s *Vision 2020* policy framework, were missing in GPRS I, GPRS II and GSGDA II. Although there was an interest to “promote and facilitate private sector participation in flood control systems and coastal protection” (NDPC 2005, 53) in GPRS II and management of flooding in GSGDA II, sea defense systems were not identified as a strategic option.

The NCCPF and NCCAS also did not capture sea defense systems, probably because these documents focused on explaining the challenges, ramifications, and broad strategies for climate change action for Ghana as a whole. Also, both documents focused on priority policy and program areas without detailed recommendations for the type of investment projects government needed to concentrate on. Nonetheless, in the NCCP, sea defense systems were clearly emphasized. This emphasis was captured under the Disaster Preparedness and Response, Focus Area 2: Build Climate-resilient Infrastructure policy (MESTI 2013b, Sec. 4:4–5). In the NCCP, the government articulated the need for developing and improving “protective infrastructure, such as sea defence walls” (ibid., Sec. 2:2–5). The priority given to sea defense systems illustrates the government’s understanding of, attitude toward, and belief in climate-resilient infrastructure and how such systems can contribute to reducing vulnerability to coastal erosion and sea-level rise in Ghana (MESTI 2013b).

## **District-level Discourses on Climate Change in the Ada Foah Area**

### *Climate change and sea defense system discourse at the district level*

The district-level discourse focuses on the District Assembly (DA), which is responsible for development decisions in the district and the foundation of local governance in Ghana (Institute of Local Government Studies and

Friedrich-Ebert-Stiftung 2010). The DA refers to the collective body of elected officials and non-elected staff of a district. This section examines the Ada East DA budget for the 2012, 2013, 2014, 2015 and 2016 fiscal years and the Ada East DA's section of the Ghana Districts online repository as a proxy for the framings of the district-level discourse with regard to understanding the nature of climate change-related issues in the district. These sources serve as useful desk study material because DAs in Ghana rarely produce regular official statements or communication on issues. However, a budget is a document drafted annually that gives insight into the DA's goals and needs. The online repository of the DA houses news stories about the district that provide some of the most up-to-date information about happenings (and some official statements on these happenings) within the district.

In all five budget documents there were very few changes in the content of the background sections and some of the details of the budgets. In many cases there was a complete repeat of information word for word from year to year. As such, this section focuses on the most recent 2016 budget, as it reflects the most current statement of the DA. The Environmental and Climate Change Management Issues section discusses the challenge of climate-change-induced coastal erosion and how the national government, not the DA, aims to ameliorate the potential impacts of coastal erosion—through the Ada Sea Defense Project. Sea defense systems as a project in Ghana fall under the auspices of the Ministry of Water Resources, Works and Housing (herein referred to as the Ministry). Therefore, any funding and direction for such projects will come from the Ministry and not the DA. The impacts of climate change on the coastline of the Ada Foah area was also evident in seventeen out of eighty-five news articles between June 28, 2007, and September 1, 2015 (the range of dates with news article on the district at the time of this writing) on the Assembly's webpage. These articles expressed the negative impacts of climate change in the Ada Foah area. The titles included: "We are submerging"; "the sea is 'eating-up' Ada Township," and "District under threat" (Ghana Districts.com News Archive on Ada East District). Twelve of these articles also focused specifically on the sea defense project, outlining initial calls for the project, updates on progress, and ending with commendations of completion.

## **The Problematization: Sea Defense Systems as an Adaptation to Climate Change**

### *National-level Government Officials' views on Sea Defense Systems*

Inasmuch as policy documents and briefs serve as official statements and proxies of government viewpoints, it is important to remember that governments are complex entities made up of individuals with views and perspectives of their own (Mathews 2005). Hence, it was necessary to assess the views of national-level government officials themselves on sea defense systems as an adaptation to climate change. The other reason for the insufficiency of a document analysis alone is the existence of *decalage*—a concept that refers to a gap between stated policy and actual practice (Max 2009). Two national-level government officials were interviewed about their thoughts on sea defense systems as an adaptation to climate change. One official's work related to project impact assessment and the other to climate-change-related issues. Both of these officials had positive views on sea defense systems as adaptations to climate change—aligning closely with the national-level policy documents reviewed. These overall positive views could be due to both of the officials' physical and administrative distance from the implemented system. For these officials, a problem was identified, that is coastal erosion and flooding, and the problem is being solved by the construction of a sea defense system.

### *District-Level Government Officials' Views on the Sea Defense System*

Two government officials were also interviewed at the district level. This involved a District Planning Officer (DPO) and a Natural Resources Management Officer (NRMO). The former's view was inconclusive, the latter's was mixed. The DPO declined to comment on whether the sea defense system was good or bad. The officer stated that it would take at least five years before any conclusive statements could be made on the benefits or otherwise of the sea defense system. This was despite the officer's detailed knowledge of both the planning and implementation process, and the district's facilitative role. The NRMO views were mixed because on the one hand, the officer felt the planning of the sea defense system had gone well since the NRMO's unit had been able to influence the redesign of the sea

defense's groins<sup>5</sup> to facilitate the annual nesting of turtles along the beach. On the other hand, this officer felt that some of the groins were disintegrating and was not sure how well they would hold up after a number of years. The inconclusive and mixed views of the district officials arise mainly from their knowledge of the project planning and implementation process and their closer physical proximity to the systems. It is likely these officers were aware of some of the community-level views on climate change, which are discussed in the following section.

## **Community-Level Views of Climate Change in the Ada Foah Area**

### *Estuary Community*

It was apparent in the community engagement that fisherfolk in the estuary community did not see the sea defense system to be very effective. They generally complained that during high tide, the sea was able to rise above the wall and flood their homes and property. From one of the fisherfolk:

The sea defense? There hasn't been that much impact...the floods still come in when the sea rises high. (Papa Ayiku)<sup>6</sup>

Not once during any session did a participant voluntarily use the term "climate change" or another word that described the phenomenon, unless specifically probed. One major concern of the fisherfolk in this community was the loss of their land to a real estate company and the increasing price of the pre-mixed fuel they used to power their outboard motors. The battle to keep their land and homes in the face of relocation was a recurring theme for the individuals in the estuary community. They were also concerned that the protection from coastal erosion was not providing any direct economic benefits to them. Responses from two fisherfolk confirm these observations:

Even in our grandfather's era, they had brought some tractors to come and sack us from here... (John Kudjordji)

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5 Elongated piles of rocks protruding into the sea at regular intervals, perpendicular to the shoreline, between which sand fills up through wave action.

6 Pseudonyms have been used for all quotations.

And

You see, what is changing everything is petrol; the fuel, the cost of fuel—that's what changed everything. Because when the fuel is always available and it is [at] a good price, every day we go and we get small [fish]. When there is a high cost of fuel and you go fishing and you don't get some, you lose. (Philip Allortey)

### *Coastal Community*

The fisherfolk in the coastal community did not have much to say about the sea defense system, most likely because the system had not reached their community at the time of their being interviewed. They acknowledged that coastal erosion was a problem in their community yet their major concerns were lack of access to credit and the absence of social protection programs. One individual in the coastal community lamented that the government appeared to be spending billions of cedis<sup>7</sup> to construct a sea defense system while it was doing nothing to improve the livelihoods of individuals who may have suffered economic hardship or a physical disability. According to Kofi Kugblenu, also a fisherfolk,

I think this [the sea defense] is a complete waste of time. The government is spending billions of Cedis on this while people have no access to loans or can't get help if something should happen and they lose their jobs right now. Look, we are in a carpentry shop, if something should happen and I should cut my hand right now, I won't be able to work and there will be no government support for me.

Like the estuary community, no one in the coastal community explicitly mentioned climate change or its effects on fishing, unless specifically probed also. Even then, the term climate change or any term describing the phenomenon was not used. Residents in the coastal community that had challenges with coastal erosion had mixed views on the sea defense system. Some intimated that the infrastructure had no impact on their livelihoods, especially in the face of economic challenges, while others waited expectantly for

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7 Local currency of Ghana (GHC). 1 US Dollar (US\$) = GHC3.95 as of August 11, 2016.

**Table 2.** Summary of Community-Level Engagement Sessions<sup>1</sup>

Session number	Total People		Fishing only		Farming only		Fishing and Farming		Others livelihoods only	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
<b>Estuary community</b>	N = 20		N=15		N=0		N=0		N=5	
One	0	5	0	4	0	0	0	0	0	1
Two	0	4	0	0	0	0	0	0	0	4
Three	1	0	1	0	0	0	0	0	0	0
Four	1	9	1	9	0	0	0	0	0	0
<b>Coastal community</b>	N = 30		N= 13		N=0		N=8		N=9	
One	8	0	0	0	0	0	7	0	0	1
Two	7	0	2	0	0	0	0	0	5	0
Three	7	0	7	0	0	0	0	0	0	0
Four	1	1	1	0	0	0	0	1	0	0
Five	1	5	0	3	0	0	0	0	1	2

1 Other livelihoods refer to livelihoods such as trading, carpentry and dressmaking.

the system's construction. One comment highlighting this duality is from Adam Andah who noted that:

It's going too slow. The sea is still taking the land...Ah well, we are watching them [the government] to see.

Table 2 provides a breakdown of the individuals engaged at the community level.

*Comparison: Estuary Community vs. Coastal Community Discourses*  
From these two communities, one theme emerges—climate change is not at the forefront of the minds of the local people. Given the nation's economic

challenges at the time of the study, it is not surprising that community members bemoaned monetary challenges and the inability to keep up with rising prices of goods and services rather than the visible threat from the environment. In both communities studied, residents did not remember a specific time at which their opinions about the sea defense system were asked, prior to the system's construction. Residents remembered being interviewed about how the sea was affecting their lives and properties but never on what they explicitly thought about the sea defense system as an adaptation strategy to climate change. According to Timothy Totolos:

This is not the first time you researchers have come here. The last time you came you asked us about how the sea was disturbing us. The government also sends people to interview us all the time. But for the [sea] defense, no one came to ask us anything about it. All we realized was that they had started.

## CONCLUSION

The national, district, and community discourses regarding climate change in Ghana present some implications for policy formulation and implementation. First, there is a need to clearly bridge the asymmetry between policy goals (both national and district) and community-level needs. The findings reveal a distinct asymmetry between the different government levels regarding the framing of climate change vulnerability as an immediate threat to the economic and financial concerns at the community level. In the framings relating to the sea defense system in the Ada Foah area, national officials' entirely positive view of the project differed from district officials' mixed and inconclusive views. This difference suggests a need to think differently about viewing governments as homogenous and monolithic entities and to realize that physical and administrative distance from issues will play a factor in determining opinions. Residents in the Ada Foah area also clearly do not view their challenges in the same way as do government agencies and officials. Thus, there is a need to converge national and district goals and the needs of residents. Such an approach will ensure that climate-change-related interventions—in this case a sea defense system—consider both climate change issues—

sea level rise and coastal erosion, as discussed in this paper—and the livelihoods of those affected.

Second, the sense of urgency that often frames actions taken in the name of climate change is absent from the community-level discourses. This suggests that the national government and DAs may need to change their planning approach to a more proactive one that involves better engagement at the community level—not just educating or informing communities about issues but listening to their input and allowing such input to influence the planning process. An expansion of the analysis of climate change vulnerability views and perceptions should include all levels and actors in the community, district, region, nation, media outlets, and development agencies. This expansion will further ensure that asymmetry between policy goals at all levels are managed to allow for interventions to be responsive to the livelihood challenges of those who are vulnerable to and at risk of climate change impacts.

Furthermore, the Ada East District as a peri-urban area has highlighted the need for a proper assessment of vulnerability to physical changes and climatic conditions. Although statements on climate change issues and sea defense systems in Ghana's policy and strategic documents identify some form of vulnerable groups, these assertions capture those vulnerable ambiguously and simplistically, and do not show the nature and extent of their vulnerability, what specific intervention mix is necessary to help them cope with their vulnerability, and how the strategies would help them to manage and/or mitigate their livelihood risks and shocks. Adopting such blanket and general statements and the design and implementation of unidimensional adaptation strategies such as sea defense systems do not completely reflect the dynamic and complexities around community livelihoods in the larger context of those vulnerable to climate change.

Third, it is also imperative that climate change be demystified to reflect the everyday language and experiences of those affected by its impacts. In other words, for policymaking, language and content matter. The onus falls on the national government and DAs—who are responsible for engaging with people living in communities at risk of climate change impacts—to carefully define and effectively communicate climate-change-related problems, identify those who are vulnerable, and craft, design and implement multidimensional adaptation strategies to respond to these problems in order to have a greater impact on the livelihoods of communities—particularly,

towards building sustainability, resilience, and reducing poverty. Although climate change is present in some of the national policy frameworks, climate change emerges at the community level discourse as an elitist view of a challenging community situation. The disposition of participants from the focus group discussions in the Ada Foah Area suggests a “non-existing” problem if climate change alone were to be the focus of discussion and intervention. Climate change must move beyond the semantic to how it manifests dynamically in the lives of those experiencing it, how they are coping with its impacts, and whether they are able to do so effectively. The desire to holistically build the resilience of peri-urban areas—the cities of tomorrow—to climate change impacts cannot ignore such divergences.

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# Integrating Climate Adaptation into Urban Development and Infrastructure Planning in Indian Cities: Urban Flood Vulnerability and Responsibility in Chennai, Tamil Nadu, India

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## ABSTRACT

*This paper emphasizes the need to integrate climate resilience into urban planning and development policies in Indian cities that experience flooding with frequent regularity. Using secondary data and literature review for Chennai, the paper reveals key factors that cause flooding, including lack of coordination and integration of policy strategies and implementation frameworks between land use development and urban flood control. Finally, the paper highlights the urgent need to address these gaps in a planned manner through mandates, policies and action plans that not only enable successful mitigation, but also improve the adaptive capacity of cities and their agencies.*

## INTRODUCTION

The 2005 Mumbai deluge, the 2013 and 2014 floods in Uttarakhand and Jammu and Kashmir, the December 2015 floods in Chennai, and the recent 2016 urban deluge in Bangalore and Gurgaon have had severe impacts on human life and infrastructure (Hashmi 2016; Jayaraman 2015; Ajaya

Bharadwaja 2015). While the frequency of phenomenal rains has decreased, the intensity of heavy rains has increased and rampant urbanization accompanied by high density, poor water drainage systems, encroachment on environmentally sensitive areas such as wetlands and waterways, and poor infrastructure planning, implementation and monitoring methods have resulted in recurring and prolonged urban flooding (Gupta and Nair 2011).

Existing studies on Indian cities highlight them as “engines of economic growth” (Sankhe et al. 2010) and as the best means to absorb growing labor pools as a result of their participation in global economic growth. The quest for opportunities and services is seen as a process that could lift large groups out of poverty, improve access to urban services and infrastructure, and lead to improved health and quality of life outcomes; it is also driving the increasing urbanization of major emerging economies. However, urbanization accompanied by a blatant disregard of natural resources and climate change accompanied by poor infrastructure planning, implementation and monitoring methods form the bases of flooding in cities.

In 2007, the Intergovernmental Panel on Climate Change (IPCC) report predicted an increase in extreme weather events such as rain, cyclones, floods, et cetera, primarily due to global warming and sea level rise (IPCC 2007). The report also identified what the cities and vulnerable groups in developing countries in East and South Asia would face in terms of impacts on human health, lives, and socioeconomic conditions. A 2010 study on the social dimensions of climate change identified and acknowledged the poor as the worst hit and linked characteristics such as gender, age, caste, ethnicity, and social and economic class to various levels of vulnerabilities and low adaptive capacities depending on location and culture-specific factors, such as access to resources (e.g., land), gender roles, and so on (Mearns and Norton 2010). Cities and their people are susceptible to flooding due to improper land use planning, unrestricted development, encroachments along water bodies and wetlands, illegal structures, and aging and inadequate infrastructure, which includes its transportation networks and corridors—road, rail and freight, and service infrastructure, such as storm water and sewerage systems.

In this context, this paper argues that a city’s capacity to successfully adapt to and reduce its vulnerability to urban floods is dependent on integrating climate adaptation policies with land use and urban development frameworks. Successful integration not only aids the urban development

process but also helps cities improve their resilience to adapt to extreme climate events such as heavy rains, while ensuring sustainable socioeconomic growth. Using the December 2015 urban floods in Chennai, Tamil Nadu, India (Pereira 2015) as a case study, this paper first examines the increase in rainfall frequency and the impact of urbanization to identify key factors that increase Chennai's vulnerability to urban flooding. It then analyzes the effectiveness of Chennai's land use regulations and implementation frameworks by highlighting the key gaps in land use development and urban flood control policies. It concludes by emphasizing the need for clear definition of responsibilities and effective coordination between implementing agencies and identifies specific measures to integrate climate adaptation strategies into urban development and infrastructure planning in Chennai and other Indian cities.

## CONTEXT

### **Rainfall Frequency in Chennai and Impact of Urbanization on Flooding**

A study done by De et al. (2013) on urban flooding in Indian megacities found that between 1970 and 2006, Chennai experienced an increasing trend in heavy rainfall events,<sup>1</sup> recording between 33 and 46 in Regional Meteorological Centers (RMC) at Minambakkam Airport Station and Nungambakkam Station, as seen in Figure 1. However, a decreasing trend for phenomenal rainfall events<sup>2</sup> was observed at both the Minambakkam Airport (14 events) and Nungambakkam (27 events) stations, as seen in Figure 2.

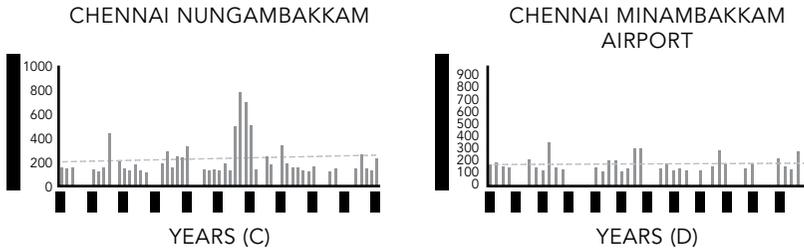
The increase is observed in Chennai during the northeast monsoon between October and December, which is accompanied by severe flooding, despite the variation in rainfall frequency. Even though Chennai has not been identified as a zone prone to flood risk, its plain terrain, lack of natural gradient, ineffective storm water management and drainage system, and rapid urbanization and expansion of the city along the coastal corridor leads

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1 Heavy Rainfall Event: A 24-hour rainfall equal to or exceeding 125 mm for a 7-day period.

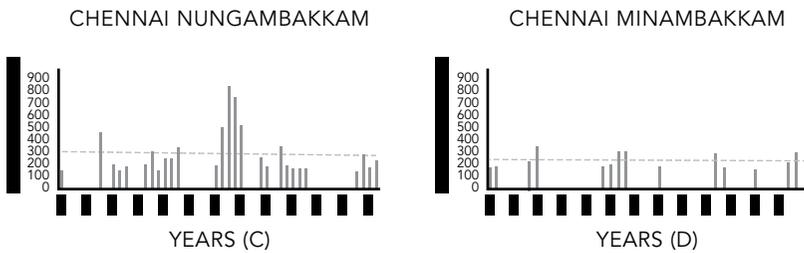
2 Phenomenal Rainfall Event: A 24-hr rainfall equal to or exceeding 150 mm for a 7-day period.

**Figure 1.** Increasing trend of heavy rainfall events between 1970 and 2006, Chennai



Source: De et al. (2013), 158.

**Figure 2.** Decreasing trend of phenomenal rainfall events between 1970 and 2006, Chennai



Source: De et al. (2013), 159.

to flooding and inundation of river banks. As shown in Figure 3, Chennai has undergone rapid expansion into coastal and peri-urban zones to the south of the city (Rajendran and Kaneda 2014; Santhiya, Lakshumanan, and Muthukumar 2010; Gupta and Nair 2011).

This rapid urbanization is characterized by factors such as (1) poorly managed, unplanned and uncoordinated development; (2) rampant encroachment along environmentally sensitive and peri-urban areas; (3) diverse urban forms; (4) increase in impervious surface areas; (5) aging drainage and storm water infrastructure; and (5) lack of coordination between municipal agencies (Gupta and Nair 2011; Jayaraman 2015). These factors not only place heavy demands on existing urban services and infrastructure, but also impact people's quality of life and increase their vulnerability to urban flooding due to climate events such as heavy rainfall (Sankhe et al. 2010; De, Singh, and Rase 2013).

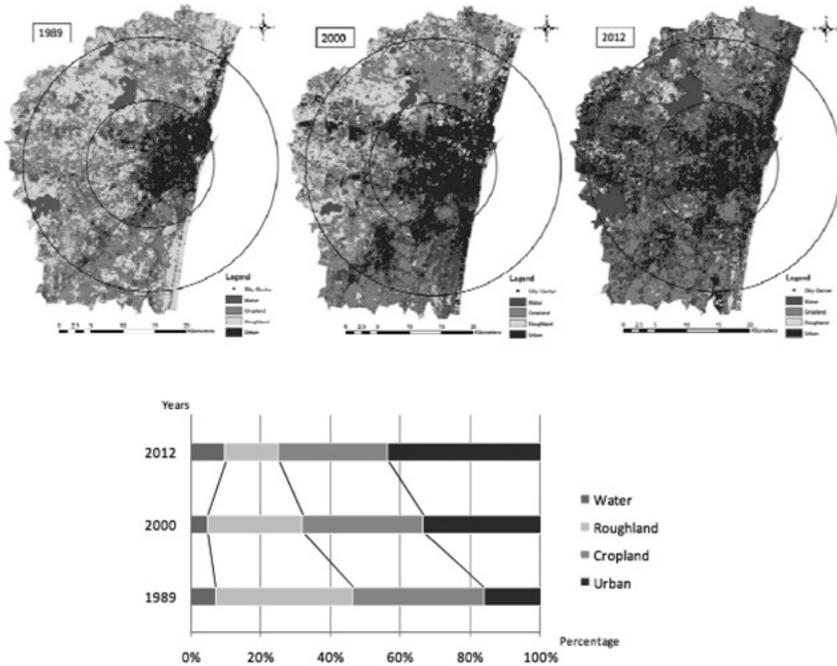
When the 21st Session of the Conference of Parties (COP21) met in December 2015 to negotiate an international climate change agreement, cities in the Indian state of Tamil Nadu were flooded by a phenomenal rainfall event. Chennai, the capital city of Tamil Nadu, had experienced continuous rain since November 10, 2015. Major roads, airport runways and residential neighborhoods were flooded, which caused breaching of local lakes and resulted in unexpected floods that led to a complete disruption of daily lives and an estimated economic loss of \$3 billion (Appadurai 2015).

## CURRENT LAND USE PLANNING AND URBAN FLOOD CONTROL IN CHENNAI

The city of Chennai falls under the Chennai Metropolitan Area (CMA) along with 16 other municipalities, 20 Town Panchayats and 214 Village Panchayats in 10 Panchayat Unions. The CMA is governed by the Chennai Metropolitan Development Authority (CMDA), which is responsible for implementing the Second Master Plan for the CMA for the 20-year period between 2006 and 2026 (CMDA 2008). At the moment, the Second Master Plan does not have a climate resilience strategy.

The Second Master Plan identifies urban development and infrastructure requirements and projects, funding for which is typically done sector-wise from the respective ministries and their departments at the national

**Figure 3.** Urbanization rate in Chennai (1989 - 2012)



Source: Rajendran and Kaneda (2014).

level and their line departments at the state level. These projects are then planned for and implemented by four local government and nine parastatal agencies such as public works, water supply, sewerage board, highways, and the CMDA. These agencies are also responsible for operation and maintenance of the above-mentioned projects. Hence land use and urban flood control is planned, implemented and managed by different agencies and therefore exist as siloed entities, which is evident in the way the Second Master Plan is drafted.

Chapters 6 and 9 of the Second Master Plan (CMDA 2008) deal with service infrastructure, such as water supply, sewerage systems and macro-drainage system. Several drainage and catchment areas, including the

Pallikaranai marsh--a major flood sink in the city--are identified, as is the need to recharge, preserve and prevent encroachment along these waterways. The plans acknowledge the inadequacy of local drainage infrastructure and the resultant floods during rains. They identify critical areas and areas where development is severely restricted and include policy strategies, such as holistic water management, augmenting water through rainwater capture and preventing encroachments along waterways in order to improve water quality. However, Chapter 12 does not show the Pallikaranai marshland as a water sink in the land use zoning plan. Although the chapter recognizes the need to prevent urban sprawl and to conserve ecological areas and waterways, the zoning map does not reflect that and policy strategies focus instead on growth that promotes and strengthens the economic situation of Chennai.

Chapter 10 on disaster management identifies hazard-prone areas in Chennai. Although the flood hazard map of India does not place Chennai in the risk zone, the plan acknowledges its proximity to the coast and to other drainage systems, such as the Adyar River, the Cooum River, Buckingham Canal and local lakes. The disaster management chapter identifies the need to map flood prone areas, but policy strategies are reactive and engineering solutions focus solely on construction specifications and follow the components outlined in the Government of India (GOI)–UNDP Urban Earthquake Vulnerability Reduction Programme.

Chapter 11 deals with water and air pollution, and identifies key environmental hotspots and green cover. It also acknowledges the impact of climate change and the need to reduce the effects of floods during monsoons. But policies focus on long-term conservation plans for natural resources in an attempt to mitigate environmental and resource loss, but there is no overlap between the land use, disaster management and service infrastructure chapters.

Although policies and strategies outlined in Chapters 6, 9, 10, 11 and 12 of the Second Master Plan highlight the need to be environmentally sustainable and address environmental concerns, the CMA does not adhere to the National Disaster Management Guidelines: Management of Urban Flooding, created by the National Disaster Management Authority (NDMA 2010). These guidelines recognize the threats posed by urban flooding that result from impermeable catchment areas and flood peaks with faster flow times that have the potential to cause severe damage in highly populated

**Figure 4.** Urbanization around Pallikaranai Marshland and Lack of Buffer



Source: Google Maps.

urban areas. The NDMA also highlights the need for an integrated urban development approach that addresses land use management and urban flood control together. The CMDA not only does not provide an integrated land use management and urban flood control approach but also fails to identify responsible parties or set departmental coordination. This has resulted in a lack of integration and minimal coordination between land use and other sectors and has also led to an absence of clear institutional frameworks between these plans resulting in poor plan implementation, enforcement and monitoring, as explained in the following section.

## **A Lack of Integrated Policy Strategies and Implementation Frameworks between Land Use and Flood Control**

The Pallikaranai marshland, along with water creeks, acts as a main water sink and a converging point for floodwaters (Figure 4). It is identified as such in the chapters on macro drainage and environment but is not reflected in the land use plan or the development controls, which has resulted in a rapid build out of the area around the marshland, including high-rise apartments, IT and business parks, shopping malls and other high-intensity uses. This indicates a conflict between land use development and flood control. Figure 4 shows the lack of buffer around the marshland and urbanization around it.

Creation of infrastructure, such as the airport on the Adyar River floodplains and a mass rapid transit system over the Buckingham Canal, the Cooum and Adyar Rivers, and Kovalam Creek, also reflects the lack of integrated land use and environmental and infrastructure planning. There are several examples of encroachment where apartments, factories, IT and manufacturing industries, commercial centers, and so forth have populated hydrologically and ecologically sensitive catchment areas (Jayaraman 2015) and negatively impacted their ability to mitigate floods. Ironically, developed areas around these catchment areas have borne the brunt of the incessant rains and resultant flooding due to lack of drainage systems.

As mentioned earlier, infrastructure development is typically handled by various agencies at multiple levels of government and is not done in coordination with land use changes. The examples stated above further highlight the conflicts between different sectors and their authority with regard to urbanization and urban flood control in Chennai. This siloed departmental approach, especially in urban development and infrastructure planning, results not only in jurisdictional overlap, but in multiple policies that do not account for the multisectoral and multidimensional nature of planning efforts and thereby hinder effective implementation.

In addition, the lack of standard and comprehensive inventories of existing infrastructure, such as age, use patterns, design specifications and location, prevents regular maintenance and monitoring. The non-availability of reliable climate risk and vulnerability assessments impacts decisions on retrofits, upgrades and future plans for new infrastructure that take into account the gradual impact of environmental and climate stresses.

## ADDRESSING GAPS THROUGH NATIONAL, STATE AND LOCAL POLICIES ON CLIMATE ADAPTATION AND RESILIENCE

The previous section highlighted the lack of coordination and integration of policy strategies and implementation frameworks between land use development and urban flood control. It also points out the urgent need to address these gaps in a planned manner through mandates, policies and action plans—short and long term—that not only enable successful mitigation, but also improve the adaptive capacity of cities and its agencies.

Recognizing these issues, and as a response to COP21 climate negotiations, India's domestic climate target, the Intended Nationally Determined Contribution (INDC) in October 2015, commits to “development without destruction,” through climate resilient infrastructure and urban centers; safe, sustainable and smart infrastructure; planned afforestation projects; and other programs that focus on advancing climate adaptation and resilience (GOI 2015). The INDC draws its basic policy framework from the National Environment Policy 2006 (Ministry of Environment and Forests 2006) and outlines specific mitigation and adaptation priorities through the 2008 National Action Plan on Climate Change (NAPCC) (GOI 2008). The implementation of proposed policies and mitigation and adaptation strategies are estimated to cost around USD 2.5 trillion between 2015 and 2030 (GOI 2015).

The National Mission on Sustainable Habitat (NMSH) and the National Mission for Strategic Knowledge for Climate Change of the NAPCC focus on improving infrastructure resilience and community-based disaster management through capacity building, research, and technology development. The comprehensive strategic plan to implement the NMSH is still being drafted. In accordance with the NAPCC, states and Union Territories (UTs) have to prepare a State Action Plan on Climate Change (SAPCC) to identify state-level measures on mitigation and adaptation. As of 2014, 27 states and 4 UTs have prepared plans. The draft SAPCC for Tamil Nadu (TNSAPCC) was approved in March 2015 (Department of Environment 2015).

The TNSAPCC focuses on (1) strengthening infrastructure to withstand extreme climate events; (2) improving resilience and adaptive capacity of communities; (3) integrating climate adaptation measures in master plans; (4) improving existing and building new drainage systems for

easy floodwater drainage; (5) restoration and conservation of water sinks; (6) implementing a sustainable climate policy; (7) monitoring all climate/weather-related activities including implementation; and (8) developing and disseminating capacity-building knowledge. However, the TNSAPCC separates climate policies under individual agencies but recommends the creation of a coordinated climate change department to oversee the individual sectors to ensure effective coordination between implementation agencies (Department of Environment 2015).

### **Bridging Gaps in the CMA Master Plan**

Integrating climate resilience into urban development and infrastructure planning would need a multipronged approach in terms of financial, regulatory and policy frameworks along with an improved technical and physical capacity. Successful integration will lead to benefits in terms of reduced exposure to extreme climate events through successful mitigation and adaptation efforts. Some key recommendations to consider for the CMA master plan include:

- **Develop an integrated and standardized database system** to identify vulnerable and flood-prone areas and communities, and the impacts of severe weather events (for instance heavy rainfall) on vulnerable groups of people. This information will enable accurate analysis and assessment of the city's vulnerability to climate-related events, which will then lead to robust emergency and early warning systems and also serve as baseline information for an adaptation-focused land use and master planning process. Accounting for climate events and their impacts in zoning regulations will help increase the resilience of existing and planned infrastructure.
- **Implement a vulnerability and risk assessment system** that focuses on the likely effects of the risks posed by urban flooding, which would then enable city governments to anticipate impacts on residents. A vulnerability assessment would be used to consider changes to the city's emergency response, mitigation and adaptation plans. The assessment would also provide the city with the information it needs to develop a climate adaptation strategy that would help it become more environmentally, socially, and economically resilient.

- **Enable integrated policy, regulatory, and management frameworks** to promote coordinated and successful planning, implementation, monitoring, and enforcement. Aligning land use and zoning regulations with land-use restrictions and existing vulnerabilities will enable adaptation and a seamless monitoring and enforcement mechanism between coordinating agencies.
- **Promote technical capacity and awareness** among decision makers, government officials, community members and other key stakeholders. Information dissemination plays a key role in building community support that will ensure participation at all levels and enable consensus for decision-making.
- **Account for climate change expenditure in state budgets** to improve performance and accountability of implementation agencies and strengthen the financial capacity of the state government to implement early warning systems and capacity building for disaster responses.

## CONCLUSION

The pace and scale of urban, social, economic and environmental change occurring across India has led to unplanned urbanization, increased vulnerability to climate events, and huge losses of human lives, infrastructure, and economic investments. This brings to attention the importance of policy frameworks that integrate climate resiliency into urban development and infrastructure planning and their role in enabling the adaptive capacity of a city. India's INDC to UNFCCC also underlines the importance of adopting a systematic approach to integrating climate resiliency to result in safe and inclusive Indian cities and communities.

Developing frameworks that build resilience into the planning process will require tools and approaches that enable accurate analysis and assessment of previous climate-related events and the vulnerability of communities. They would also need to account for gaps in capacity and knowledge, due to the uncertainty of climate events and their impacts, to develop techniques that strengthen institutional capacity and improve financial accountability. Aligning policy and regulatory frameworks will promote

successful coordination among implementing agencies and improve the financial accountability of local agencies.

Climate-resilient urban development and infrastructure planning is a multidimensional issue that needs to be balanced between a country's socioeconomic growth, natural resource protection, and restoration. It requires adaptive public policies and institutional arrangements that allow for risks to be identified and prioritized so that they can be integrated into a city's urban development and infrastructure planning and implementation processes (Adger et al. 2006). In addition, it also needs proactive adaptive efforts to create awareness and strengthen sociocultural and economic conditions and improve the resilience of communities to deal with climate impacts. The benefits of integrating climate resiliency into existing national, state, and city frameworks in India are many: they help communities and cities adapt to climate change; ensure sustainable socioeconomic growth by reducing exposure of vulnerable populations to extreme climate events; increase savings in infrastructure costs for the country; and improve social, economic and quality of life for its citizens.

Although the December 2015 floods in Chennai have not been directly linked to extreme climate events, they do highlight the lack of resilient infrastructure and urban development planning in Indian cities. Given the scale of impacts on human, social, and economic capital, there is a need to adopt frameworks that follow a systematic approach to building resilience in infrastructure and urban development planning. This process will allow seamless integration of climate change analysis into urban development plans and investments that will improve the resilience and adaptive capacity of Indian cities.

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# Evidence-based Planning and Housing Approaches Bias: Methodological Alternatives for Broadening Policy Options in Mass Housing Programs

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## ABSTRACT

*The paper analyses the role of evidence-based planning and evaluation regimes on setting and legitimizing housing policies. It explores the perceived roots of bias towards the standardized large-scale housing programs vs. co-productive and incremental housing solutions. The analysis is based on desk research and interviews with researchers and practitioners in the context of two mass housing programs and co-productive-oriented solutions in South Africa and the Philippines. Finally the paper explores in which way evaluation regimes can block or streamline innovations.*

## INTRODUCTION: HOUSING APPROACHES AND EVIDENCE-BASED PLANNING

The housing backlog has been long identified as one of the key development challenges in the Global South. Along with growing rates of urbanization from the middle of the twentieth century, many states have encountered the issue of how to provide adequate shelter to all while facing extreme financial pressure and a set of different priorities. Consequently, a variety

of approaches have been experimented with, including the engagement of the State as a provider of housing, market-oriented approaches promoted by agencies like the World Bank, or building upon self-help strategies for the urban poor. Urban planning analysis found its roots in a landmark social survey, carried out by Charles Booth in 1887, in an effort to map the social problems of London, and has since evolved as a key element in the majority of development projects. Currently, baseline studies and monitoring and evaluation (M&E) methodologies are applied at practically all levels of public interventions, whether facilitated by international agencies, NGOs, or national or local governments. Nevertheless, in a variety of local contexts, the process of housing policy change has stalled and the issue of homelessness is nowhere near being resolved. Contrary to the evidence base, many governments rely on clearance or relocation as a “solution to the slum problem” or replicate standardized mass housing approaches. The latter is manifested by a renewed interest in heavily subsidized mass housing programs in several countries around the globe (Huchzermeyer and Misselwitz 2016). While they differ in their impacts, many have adverse effects on the local populations. Peripheral locations and the lack of services and livelihood opportunities in these neighborhoods are identified as some of their key problems (Buckley et al. 2015).

On the other hand, the failure to progress in addressing housing issues in specific local contexts is not equivalent to the general stagnation in the policy debate at the global scale. In fact, backed by research bodies, the global community has significantly progressed in understanding the housing process. This is driven by global development strategies, like the 2015 Sustainable Development Goals (SDGs) and the 2016 New Urban Agenda (NUA), which link the issues of urban development with the debates on environmental protection, disaster reduction, and, most importantly, inclusiveness (McGranahan et al. 2016). The latter is acknowledged by reference to the Right to the City concept in the draft NUA and the document’s focus on participatory development and the devolution of power and responsibilities in the planning and implementation process (United Nations 2016). Overall, a fairly cohesive vision emerges from these documents of inclusive cities with well connected, dense, socially diverse neighborhoods having low ecological footprint. The housing process is identified here as a catalyst for poverty reduction through the creation of productivity opportunities and providing a chance to lift households out of poverty (Turok 2016).

Yet again, if there is a sound global consensus on what kind of cities we want, as well as context-specific professional protocols and research data for promotion of innovative housing measures, why is it that, so often, housing delivered by states still takes the form of uniform, stand-alone programs? This paper analyzes the roots of this dichotomy and the perceived bias for standardized mass housing delivery programs in the context of the limitations of the current evaluation regimes and the utilization of gathered data. It poses a hypothesis that the current evidence base has a limited impact on informing policy change in comparison with other, often off-scene factors. Finally, it discusses the alternatives for making evidence-based planning a more appropriate tool for leveraging innovative solutions into mainstream programs.

## METHODS AND THE TYPOLOGY OF THE ANALYZED PROGRAMS

The context of the paper and its hypothesis are based on auto-ethnographic reflections on professional experiences and their analysis, using gathered field notes, recordings and materials. Although it goes beyond a specific project or program, it was made possible as a result of personal involvement in two monitoring and evaluation (M&E) activities: (1) a research period with the Philippine Institute for Development Studies (PIDS) in Metro Manila in 2012, which included participation in the Evaluation of the Resettlement Programs of the National Housing Authority and independent research on community-based approaches to settlement upgrading; and (2) experiences in Cape Town in 2013–2015, linking to systematic M&E of the Violence Prevention through Urban Upgrading program (Cassidy et al. 2015). The core of the study involves desk research concerning the evolution of housing policies in the Philippines and South Africa, as well as a set of expert interviews with researchers and practitioners from both countries. The interviews are used to verify the initial hypothesis and conclusions from the desk research and to seek an insight into the interviewees' personal experiences with evaluating, planning and implementing the programs with relevance to housing. The interviewees were selected based on their professional expertise and were approached thanks to personal networks via the use of the snowball method.

Bearing in mind that there are a multitude of different programs in both countries, the analysis of evaluation regimes and policy framing factors was

conducted in the context of the most well-known and largest scale approaches that represent: (1) the standardized mass housing approach in both countries (i.e., in South Africa—Reconstruction and Development Programme [RDP] housing; in the Philippines—the developer-led Resettlement Program); and (2) approaches commonly labelled in the literature as “innovative” or “co-productive” (in South Africa, the Upgrading of Informal Settlements Program; in the Philippines, Community Mortgage Program (CMP) and the incremental modality of the Resettlement Program). This typology aims at a selection of approaches that are located on different ends of the housing delivery spectrum: from centralized ones, entailing the provision of a ready/nearly-ready product, to decentralized ones, which involve the notion of incremental upgrading of settlements where a housing unit comes at later stages of the process. The analysis also looks out for co-productive elements in the programs’ set-up. This entails “the joint production of services between citizens and state with any one or more elements of the production process being shared” (Mitlin 2008, 340). The typology allows the inclusion of approaches that are not merely about the delivery of a shelter, but also resonate with the SDGs and NUA notions of inclusivity through the creation of livelihood opportunities and incremental in-situ upgrading. They also relate to empowerment and the creation of innovative solutions, which are considered to be characteristic of co-productive solutions, especially if steered by a civil society (Watson 2014).

## EVOLUTION OF HOUSING POLICIES AND EVIDENCE-BASED PLANNING: SOUTH AFRICA AND THE PHILIPPINES OVERVIEW

Although both countries represent very different contexts, they also share several intriguing similarities in terms of their housing markets and policy transformation contexts. In both countries, the housing shortages and inequalities are huge. Both have very active civil societies, which form strong networks with relevant local and global outreaches; however, each country radically differs in terms of the resources it has spent on housing during the last twenty years. South Africa is considered to have allocated billions of Rand while, in contrast, annual public spending on housing in the Philippines in the years 2001–2007 was on average less than 0.1% of national GDP, which is considered to be one of the smallest in Asia (Ballesteros

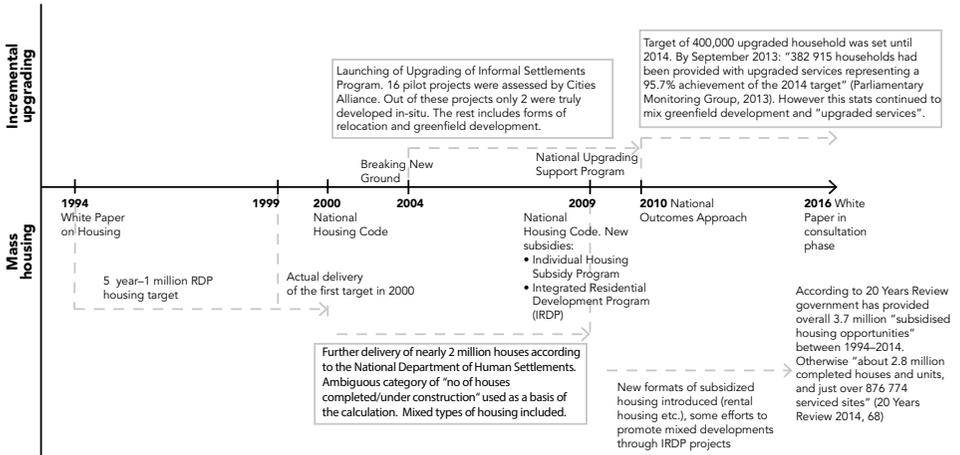
2009, 5). On a governance level, both countries experienced critical shifts in the 1980s and 1990s, when the local political regimes changed. This resulted in the creation of new legislation and decentralization reforms in the 1990s. The key policies were developed on similar foundations but were defined by different means for achieving their goals. The following section traces the transformation and impacts of these policies.

### **South Africa**

During the last twenty years, South Africa has experienced an evident shift in its housing policies. The initial focus on the standardized mass housing approach, which was mobilized by the National Housing Subsidy Scheme (and Reconstruction and Development Programme [RDP]), has been gradually shifted into in-situ upgrading and subsidy programs targeting the development of mixed neighborhoods. However, the legacy of the initial approach is still considered to affect the spatial structure of the South African cities, as well as the interpretation of more progressive policies by the main housing actors in the country. In order to understand the implication of the process, one needs to look back at 1992 when initial discussions about the post-apartheid housing market had taken place within the National Housing Forum. The focus on more incremental and people-driven solutions was already on the table, yet the political context and lobbying of the private sector favored the approach that was able to deliver the maximum number of housing units in the shortest time possible (Huchzermeyer 2003). Consequently, a project-linked once-off housing subsidy was framed as a dominant program in the 1994 White Paper on housing, which resulted in the creation of isolated townships built almost exclusively by developers. An examination of the evaluation regimes showed a pattern of quantitative and target-oriented measures (see Figure 1).

Thus, while in discursive terms the main policy reviews (like the 10 Year Review) acknowledged the issues related to the approach, its indicators were focused on delivery targets (Charlton and Kihato 2006). In fact, looking only at the program's objectives and delivery figures, its initial phase almost reached the impressive target of one million housing units delivered in five years. However, parallel to the dominant narrative of success, the faults of the approach have slowly become obvious, with rising unemployment in the peripheral townships and escalating crime rates. The malfunctions of the developer-driven RDP housing approach resulted in questioning the

**Figure 1.** Simplified policy transformation process with main targets and delivery figures in South Africa



Source: Parliamentary Monitoring Group (2013), South African Government (2014); Gordon et al. (2011).

approach and a policy change, which placed the developer responsibilities on the public sector between 2001 and 2004. These, however, have not significantly changed the main problem with the projects, which continued to be criticized for peripheral locations and were argued to reinforce apartheid-like spatial segregation lines (Gordon et al. 2011, 25).

A visible shift in this approach came with the 2004 Breaking New Ground (BNG) policy, which supported the concept of poverty reduction through the in-situ upgrading of informal settlements. It was later embedded in Chapter 13 of the National Housing Code, which defined the principles for the Upgrading of Informal Settlements Programme (UISP) (in 2009 included in a redefined umbrella program: the National Upgrading Support Programme [NUSP]). The process of development of the BNG policy was preceded by an extensive research component within the Department of Housing, although, according to Charlton and Kihato (2006, 261) it was not well taken into account in the final documentation. A lack of full

understanding of innovative approaches may have resulted in the common interpretation of the ambition of “eradication of informal settlements” in a very direct manner eventually leading to increased incidents of forced relocations. This is also attributed to lack of capacity among responsible parties (Tissington 2011, 72, 77) and the reluctance of officials, who did not favor the approach. The new approach was reviewed during the NUSP preparatory phase from 2006 onwards when the Cities Alliance (n.d.) conducted an assessment of sixteen pilot projects. However, as indicated in the report, only two of the settlements were truly upgraded in-situ. The rest incorporated greenfield developments or mixed sites, which included the controversial N2 project in Cape Town, characterized by a top-down approach and involving relocations that led to cases in the Constitutional Court (Fieuw 2015). Additionally, the assessment was done shortly after the start of the projects. According to Huchzermeyer (2010, 139), none of the upgrading efforts in big cities in the country was finalized by 2008.

The next step in the policy transformation was the adaptation of the Enhanced People’s Housing Process in 2008 (replacing the older People’s Housing Process from 1998) and, most importantly, the 2009 revised Housing Code, which introduced a new individualized subsidy scheme that, de facto, replaced the RDP approach. Furthermore the modality of integrated and mixed Integrated Residential Development Programme (IRDP) projects in well-located areas equipped with most essential urban amenities was proposed. Again, the municipalities were supposed to act as developers to undertake all the project activities with the involvement of appointed professionals, who would deal with the design of settlements and houses, including the installation of services, and so on. However, most of the municipalities and provinces adopted the Turn Key Contracting Strategy, which again shifted the development responsibilities to a private sector contractor, including the administration of beneficiaries (Tissington 2011, 82).

The most profound manifestation of the policy shift favouring in-situ upgrading was the announcement of the National Outcomes Approach with Outcome 8 stipulating the target of 400,000 improved households in informal housing between May 2010 and April 2014. The actual delivery of the targets and its evaluation is discussed in the following sections and illustrated in Figure 1. The implementation issues as well as the drying up of subsidy money led to yet another mobilization of transformative forces

promoting the in-situ upgrading approach. Another “White Paper” is currently in the discussion and consultation phase.

### **The Philippines**

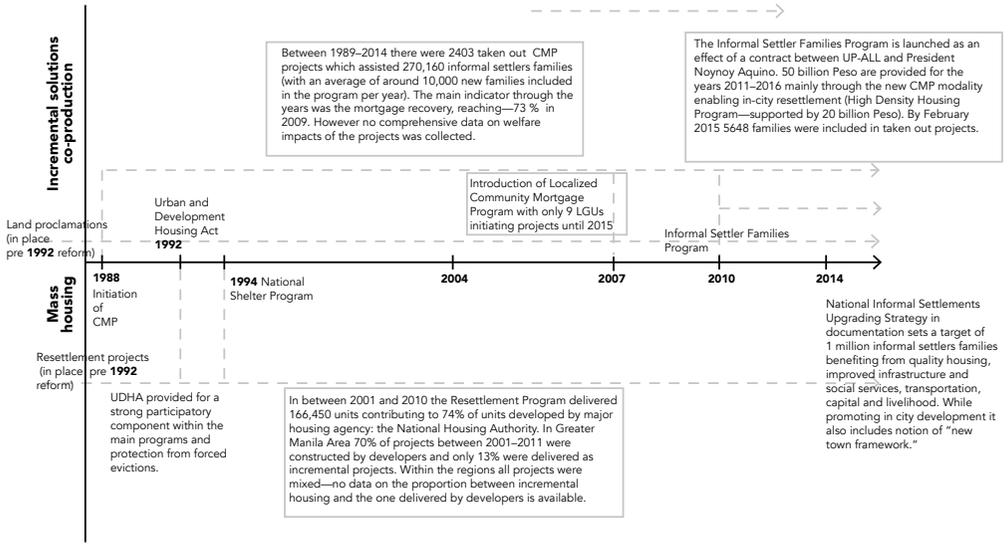
The housing policy transformation process in the Philippines followed a radically different pattern. Soon after the fall of the Marcos regime, the state-led housing approach started to reverse. The changes were initiated with the Philippines constitution from 1987 and a shift began positioning the state as the “enabler” of housing rather than its “provider.” The new focus was on decentralization, reinforcing participatory development and involvement of the private market, all of which were strongly reflected in the Urban and Housing Development Act (1992). Additionally, a number of mortgage institutions were established to assist the poor to access financing opportunities. In 1994, the National Shelter Program was defined and it included several programs designed for the delivery of socialized housing in the country. The most important ones were the Resettlement Programme, the Community Mortgage Program (CMP) and the land proclamations system, the latter two of which were strongly inspired by self-help solutions, co-production and the notion of incremental development. However, unlike in South Africa, these innovative programs were not entirely new as land proclamations had happened in previous decades and the CMP had been launched in 1988. Additionally, during the 1970s, Metro Manila experienced a massive slum upgrading effort within the World Bank’s Tondo Urban Development Project. Although the results did not prove to be sustainable, the legacy of the experience might in some way have affected the thinking on the new urban policies in the Philippines.

Both the CMP and the land proclamations had been focused on the provision of secure tenure with the intention to support the upgrading of concerned areas and the eventual formalization of housing. Although the CMP is acclaimed as an innovative approach, based on comprehensive review of the case studies (Karaos et al. 2011), much of the program’s attention was devoted to mortgage recovery rather than poverty reduction (Porio and Crisol 2004). Analogously, the CMP evaluations have been focused on the former. Due to the high level of flexibility, the outcomes of the CMP, as well as land proclamations, differ on a case-to-case basis and are linked to the capacities of the concerned communities, local government units and local political relations as well. In terms of land proclamation sites, some

of them did not change over the decades, while others underwent gradual transformation with the provision of infrastructure, reblocking and the consolidation of housing (Galuszka 2014). Hence, quantitative indicators showing the number of “benefiting households” are not truly comprehensive. Overall, over the years, a number of issues have been identified. The CMP rarely moved out of the land acquisition phase (98% of all loans) and did not achieve scale up. A major innovation was introduced in 2007 when the Localized Community Mortgage Program was initiated. Its intention was to strengthen the participation of the local government units (LGUs) in the financing and implementation of the process. However, up to 2015 only 9 LGUs participated with 28 overall projects (Ballesteros et al. 2015, 21, 56), which may suggest that LGUs were not that interested in taking on other fiscal and organizational responsibilities.

Next to these co-productive solutions, the Resettlement Program has been responsible for producing a large number of housing units, mainly in and around Metro Manila (see Figure 2). This program is identified to have three dominant modalities, which include developer-led, incremental and mixed approaches. The developer-led modality is dominant in the Greater Manila Area where, between 2003–2010, 70% of the 45 projects were delivered by developers (with only 6 incremental and 7 mixed sites) (Ballesteros and Egana 2012, 34). The key feature of the developer-led Resettlement Program was that it involved the developers’ implementation of the sites from selecting the locations, purchasing the land for site development and construction of row housing. The ready product was delivered to the National Housing Authority and then the people were relocated, arguably, in a humanitarian manner. The popularity of the modality was linked to the mandatory requirement for the private sector to set aside 20% of all proposed subdivision areas for socialized housing or to contribute an equivalent amount through offset payments. However, this intentionally pro-poor policy turned out to have adverse effects on livelihoods, promoting urban sprawl and unemployment through the dominant delivery of housing on cheap land outside of the city (Lindfield and Naik Singru 2014; Galuszka 2013). Additionally, a number of issues in the implementation have been raised and were related to the inability and unwillingness of the local government divisions to secure good, in-city locations for site development (Ballesteros 2009). Overall, the developer-led modality of the Resettlement Program in the Philippines curiously reminds one of South

**Figure 2.** Simplified policy transformation process with main targets and delivery figures in the Philippines



Source: Ballesteros et al. (2015); Ballesteros and Egana (2012, 34) Housing and Urban Development Coordination Council (2014, 15).

Africa’s RDP housing: it results in similar issues in such a different context, including peripheral development, development of low-quality housing and reinforcing sociospatial polarization on a city scale.

On the other end of the spectrum of housing modalities is the incremental housing resettlement process, which, arguably, responds to the principle of housing being used as a tool to stimulate livelihood opportunities. It entails involving the communities in building their homes with delivered materials and in the majority of cases it is executed as an in-city relocation. The disparity between the developer-led and incremental modalities raises the question of why the former became the dominant option in Metro Manila. Although the rapidity and initially lower costs are the obvious arguments for policymakers, the success of the somehow related CMP process should act in favor of this incremental modality. The comprehensive evaluation of

the NHA Resettlement Program was realized in 2012 and it recommended that the in-city incremental modality be the preferred option with better welfare effects, although it was characterized by initially higher costs and a complicated process (Ballesteros and Egana 2012).

Overall, the Philippines housing policy is a contradictory space: on the one hand it is prized for its innovativeness and very active urban poor sector; on the other, it maintains an influential and rather top-down mass housing scheme (in spite of having an incremental policy option at hand) and there are often incidents of forced relocations. As seen by Gavin Shatkin, this dichotomy is linked to a broader response of government to two powerful transformative forces in the country: the civil society and the political and economic circles. Local “innovative policy and housing programs have been systematically undermined by many actors both in government agencies and the private sector who have employed legal obstacles, loopholes, and non-compliance” (Shatkin 2012, 21). This translates into limited space for policy change within the official governmental programs. According to Kristina Constantino-David, the former head of Housing and Urban Development, the policy shift from 1998 aimed at discarding the privileged position of developers in housing programs and a shift of the department’s budgets in favor of the urban poor (from 20% to 80% devoted to socialized housing) was confronted with “angry protests from the real estate sector” and a passiveness from top decisionmakers and aid agencies in interfering with various interest groups (Constantino-David 2004, 133).

The most recent innovation connects to the 2011–2016 50 billion peso Informal Settler Families Program. It is concentrating on in-city housing and is targeting people for resettlement from the disaster prone areas in Metro Manila (Karaos and Porio 2015). Its establishment is linked to advocacy of the urban poor network, UP-ALL, which was able to sign a ten-point covenant with the previous president, Noynoy Aquino, before his election. On the other hand, its final shape is affected by the recommendations from the World Bank. The new program resulted in the establishment of the High Density Housing program involving the construction of condominium or cooperative types of buildings being managed in a cooperative manner within the CMP or LGU financing scheme. Although offering an in-city resettlement option and addressing the issues of urban sprawl, its affordability for the poorest informal settlers is questionable (Ballesteros

et al. 2015, 32). Similarly, even though the process has an extensive community involvement component, it seriously limits the engagement of communities in a construction phase as the developers or contractors realize the larger structures. As such, the innovation reverses the most co-productive-oriented aspect of the CMP. Last, in 2014 an extensive intragovernmental consultation process for a new National Informal Settlements Upgrading Strategy for the Philippines was conducted and outlined an ambitious target of one million informal settler families benefiting from quality housing, services, livelihood and transportation by 2025 (Housing and Urban Development Coordination Council 2014, VII).

## RESULTS

The review was followed by interviews with local experts who were asked to identify the most important framing factors for policy change in their countries, as well as giving their opinions about the roles of evidence-based planning. The shortcomings of current M&E frameworks were discussed and some desired changes were proposed. Although approaching the topic from very different angles, the experts shared a common view on several policy framing issues, with classical M&E not being considered as a main factor.

### **Main policy framing factors**

#### *Sociopolitical factors: who decides and why do they decide?*

Political considerations have been identified by the majority of the interviewees as having a major impact on housing policy formulation. Three of the identified subfactors can be categorized as political gains, ideologies and off-scene factors that also relate to advocacy of the urban poor. All of these have a strong impact on the social concepts of human settlements. Post-1994 South Africa is a clear example of where the lack of housing was identified as one of the strongest manifestations of inequality and injustice. The focus on rapid provision, rather than enabling, was the most obvious political and ideological choice for the ANC party during its first term. The setting of overwhelming housing targets has, therefore, been a

**Table 1.** Interviews—summary of policy framing factors and M&E considerations

Main policy framing factors		Main M&E considerations	
Group 1: Socio-political factors	Political considerations (7 mentions), social factors (3), advocacy of the urban poor (3)	Group 1: M&E burden	M&E burden (3)
Group 2: Mandates and capacities	Capacity issues (6), overlapping/conflicting mandates (5)	Group 2: M&E set up	Outcome-based vs. output-based evaluations (8), timeframes issues (3), standardization issues (3) policy development phase evaluation need (2)

manifestation of a “service delivery” approach, which framed the discussions of political leaders who tend to be tempted “to give big solutions and make mega projects sound great” (interview 3<sup>1</sup>) to the community, on the ground level where the “RDP has been promised by Ward Chancellors to communities in order to get the votes” (interview Calvo Boixet). The discourse around the RDP housing and the social concept of ideal housing outlasted the responsible housing policy.

The interviewees, who were involved in the promotion of upgrading and incremental approaches, have faced these difficulties directly: “during the community workshops in Khaya, Johannesburg, different housing options were supposed to be discussed but community members from the start did not want to consider any other option than the RDP type of housing” (interview Calvo Boixet); or “in one settlement people were ok with the idea of contributing their own resources to the construction but they strongly contested any changes in the traditional housing typology, for instance, two-story housing was declined” (interview Torresi). Similarly, the concept of a good neighborhood has been exclusionary for the informal settlers whose presence was considered detrimental to

1 Some of the interviewees preferred to keep selected quotes anonymous. In these cases instead of their names a random number was assigned to the interview.

commercial developments or even to their neighbors with similar socio-economic status (interview Torresi; interview 4; see also Pieterse 2009). In this type of context it might be hard to push forward the concept of mixed neighborhoods and roll out in-situ upgrading.

Although the enabling approach promoted in the Philippines is radically different, the political gains and urban issues were also reflected in the presidential election process in 2010, when the urban poor sector was able to push forward its agenda. Next to the level of political pragmatism, the interviewees underscored pure ideological reasons that seemed to be truly internalized by high-level bureaucracy. This is, paradoxically, reflected in contradictory policy orientations in both countries. For instance, in the case of Johannesburg, two lines of thinking about the city are present (interview 3): one, promoted by the provincial government, supports the development of a “smart province;” the other, positioned in the city administration, supports the concept of Johannesburg as a “world-class African city.” Most recently the latter was also confronted with the discourse on the sustainable development and in-situ upgrading, which is said to be represented in the new city’s Spatial Development Framework 2040 (UN-Habitat, 2016). In Manila the narrative of pro-poor development seems to have been present for decades yet, at the same time, huge real estate driven, business district projects, like the Bonifacio Global City, are heavily supported.

Off-scene factors can sometimes have an equally powerful impact as the ideological factors and the political gains aspect (as in the 1992–94 lobbying of the private market against the enabling approach as promoted by the civil society in South Africa); this suggests that already at the policy formulation stage there should be some form of external monitoring applied (interview Fokdal). Additionally, interviewees mentioned that the ongoing preference for standardized developer-led housing modalities, rather than facilitating in-situ upgrading, might have been linked to personal connections and individual benefits (interview Torresi; interview 8). Similarly, good personal relations between communities and governmental stakeholders can indeed increase the chance of specific area-based interventions being implemented.

### *Who implements? Mandates and capacities*

The second group of factors affecting policy changes are the capacities and mandates of the implementing organizations. These can be linked to two subcategories: overlapping/conflicting mandates and lack of capacities. The

first level—overlapping/conflicting mandates of implementing organizations—was reported to be an issue in both countries. Although the need for diversified housing products was underscored (interview McVitty), the issues of overlapping and unclear responsibilities were considered as problematic (Galuszka 2013). For instance, in South Africa the envisaged role of municipalities to administer national housing programs was stalled because they were not able to complete necessary accreditation procedures. Currently, while new policy instruments—like the Integrated Urban Development Framework, Spatial Planning and Land Use Management Act (2013) or new “White Paper” draft—are starting to line up towards incremental in-situ upgrading methodology, there is still lack of operation clarity on the implementation process (interview Kumar).

Another of the key examples is the mixed priorities and mandates of different levels of government in both countries. Although provincial governments might be interested in high housing delivery numbers (which are politically motivated), the municipalities need to provide infrastructure and accommodate the land for these developments. In a long-term focus on quantity, other considerations come into play, such as maintenance and transportation costs in sprawling neighborhoods (interviews Gotsch; Kumar). The second sub-element is the lack of capacity, evident especially in the case of co-productive approaches, which require mid-level administration to use a new set of skills (interviews Kumar; Calvo Boixet).

In South Africa, the initial limited understanding of the in-situ upgrading process was evident and M&E procedures, rather than capturing the problems, were legitimizing misinterpretations of the approach. One of the main issues links to including greenfield developments in the quantitative target of 400,000 upgraded households, whenever parts of the beneficiaries who receive new housing originate from informal settlements (interview Fieuw). The presentation of the results turns out to be problematic and fudges what is really happening on the ground (interview 3). Moreover, officials are judged based on reaching their targets and not on the long-term welfare effects of applied policies, which does not incentivize them to initiate the learning process to accommodate the new policies. This might explain why the capacity building and evaluating component of NUSP laid out in the Annexure 1 for Outcome 8 of Delivery Agreements (South African Government n.d., 18–20) have not yet resulted in full comprehension of the upgrading process.

In the Philippines mid-level bureaucracy is also reported to lag behind in terms of implementation of innovative policies. This is visible within Comprehensive Land Use Plans, which should identify land for socialized housing within LGUs, but which often are prepared in a reactive manner just to satisfy government instead of providing real solutions to the local problems (interview 9). Similarly an anecdotal feedback explaining the limited outreach of the incremental resettlement program in Metro Manila links it to the unwillingness of high-ranking officials, who considered the process to be “messy.” Overall, it seems natural that implementation typically lags behind several years after the policy change (interview Kumar). In co-productive interventions, the learning process can be considered to be even longer as it also needs to happen on the NGO and community side, which in the South African case often turns out to be problematic (interview Torresi). Although long periods of learning by doing seem to be a necessity, it also affects public perceptions of specific approaches. In such a context, the time-limited pilot projects are vulnerable to numerous mistakes and should be treated as a laboratory of change, rather than a true showcase of an approach.

### **Evidence-based planning: What are the issues?**

In both countries the monitoring, evaluation and assessment of policies and housing programs is systematically conducted. Similarly, both have several institutions responsible for these studies and have access to internal governmental data. In South Africa, the Department of Planning, Monitoring and Evaluation monitors the outcomes of policies, like National Outcomes Strategy, and works on the development of assessment tools, like Development Indicators or Citizen Based Monitoring. Analogous structures exist in provincial and city governments. In the Philippines, relevant governmental institutions conduct internal monitoring and their programs are the subject of evaluations conducted by the PIDS based at the National Economic and Development Authority. Many of those hold relevant findings, which in one way or another affect local policies. However, as discussed in the previous sections, the evidence base is often not considered by experts as a primary tool that can steer the transformation of policies, especially if these were to promote solutions with a high degree of flexibility and co-production. In the second part of the interviews, several main issues with the existing M&E methodologies and the way in which they translate

into policy innovations were analyzed. The listed issues can be categorized into two groups: the M&E burden and M&E set-up and objectives.

### *M&E burden*

This category strongly links to the “mandates and capacities” group of policy-framing factors. Similar to the complicated policies, the complicated M&E procedures are not always understood or considered as necessary (interview Torresi). First, this links to limited capacities. Second, while a project or program’s M&E should provide an internal learning opportunity, often it is seen as a judgment on the personal skills of the project staff (interview Gotsch). Third, the typical project cycle management set-up requires putting significant resources and time into M&E activities. For small organizations, it can become a burden, for instance, when different funding agencies use different types of indicators and templates (interviews Gotsch; Torresi). This is why simplicity is considered to be one of the most relevant characteristics of the M&E processes and indicators. On the other hand, some of the M&E procedures can unwittingly promote large-scale standardized housing where the evaluating body mainly interacts with unorganized individuals and where it is relatively easier to gather data. In the case of in-situ upgrading interventions, one typically needs to engage in a participatory evaluation scheme or the employment of local fieldworkers. In long lasting projects, this latter type of engagement can become a relevant source of income and hence be a very sought-after position, which can be the subject of internal tensions and power dynamics in a community.

### *M&E set-up and objectives*

The interviewees mentioned the M&E set-up issues as another key factor that can be blamed for the reproduction of conservative policies. The main group of issues can be categorized as: timeframes of evaluations, standardization issues, outputs vs. outcomes orientation, and rationalization issues. First, the typical logic of M&E includes ongoing monitoring and ex-post evaluation shortly after the delivery of the project, which does not, necessarily, enable capturing the project outcomes (interviews Gotsch; Torresi; Lusterio). For instance, monitoring the housing quality in developer-led resettlement projects around Metro Manila tended to be done shortly after their construction phase; as a result, the resilience of houses or climatic response of structures were not included (interview Lusterio).

Second, different agencies responsible for specific programs use different types of baseline data and different indicators. This has been considered especially troubling in the case of informal settlements, which are not always well understood by formal agencies. This is why one of the key strategies of urban poor movements is to engage in enumerations and profiling of settlements, which enables them to negotiate their needs with formal actors more easily (Patel et al. 2012). The necessity of getting comprehensive baseline data is gradually internalized by local governments. One of the examples of the formulation of uniform baseline data for upgrading informal settlements is happening currently in Western Cape, where the Community Organisation Resource Centre did the rapid assessment of about one hundred informal settlements for the province with the results informing the Informal Settlements Support Plan (interview Kumar).

Third, as illustrated by the example of large country-level programs, the policies are evaluated based on quantitative target delivery (see Figures 1 and 2). Although the interviewed experts did not disqualify quantitative targets, they underscored the necessity to shift the focus from output-based evaluations to outcome-based evaluations. As such, the obvious choice in long-term evaluations is to look at the livelihood impacts, employment, crime, and so on (interviews Calvo Boixet; Fieuw; Fokdal; Gotsch; Kumar; Lusterio; Tissington; Torresi) rather than concentrating solely on the number of installed taps or completed housing units. This would be very relevant for co-productive solutions, which potentially have stronger welfare impacts than standardized mass housing, but solid data for proving these points is often not available through standard M&E approaches. Last, the current M&E framework focuses on the rationalization of all of the project aspects. As such, it rarely counters for flexibility, unexpected process, outcomes and innovations (interview Gotsch), which can be the strongest advantages of this type of approach to enabling innovations in the community-government interface (Mitlin and Satterthwaite 2004). Consequently, a whole set of very relevant, but not quantifiable, benefits for the community are not captured by these evaluations.

## CONCLUSIONS

When comparing the level of decrease in informal settlements in South Africa and the Philippines, the pure quantitative information suggests

that the first country achieved enormous success while the second failed in terms of upgrading efforts. However, as discussed in the previous sections, this does not necessarily reflect long-term effects of applied policies on people's lives and a city's development. Although it is common knowledge that target-oriented, quantitative evaluations rarely hold the whole truth about the urban realm, in a political environment everybody from the top decisionmakers to midlevel bureaucrats orient their activities and are held accountable through achieving these targets. Consequently, a truly comprehensive evidence base may not be well taken into account when new policy directions are explored. Based on the expert recommendations, this paradoxical situation needs to be challenged through greater systemic focus on outcome-based instead of the output-based evaluation measures, standardization of information about alternative approaches and, simply speaking, making the evaluation tools easier and less time consuming to use. Additionally, as the main policy-framing factors have been identified as sociopolitical factors, changing the mind-set and professional routine of the high and midlevel stakeholders requires more than just capacitation measures. New monitoring and evaluation approaches must be introduced and they should aim at tracking the policy formulation process with special focus on the economic and political benefits for the main stakeholders involved. Full transparency at early stages of the policy formulation process as well as potential and immediate political consequences of the choices should guarantee that the decisions are made with higher consideration for the real and long-term needs of the end users of a housing product.

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# How an Urban Morphological Approach Can Contribute to the Assessment of and Inform a Targeted Planning Policy Response to the “Urbanization of Poverty” in the Data-Poor Cities of the Developing World: Evidence from Kaduna, Nigeria

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## ABSTRACT

*The study investigates whether urban morphological analysis can be used as a tool to assess and respond to the problems of housing deprivation integral to and indicative of multidimensional poverty in the data-poor cities of the developing world. The study is based on secondary data analysis of the city-wide household survey carried out as part of the Kaduna Masterplan Review in 2010. The findings show that areas that are broadly in line with the Millennium Development Goals slum definition (as established by UN-Habitat) are more likely to suffer from deprivations and this data can inform poverty reduction policies in urban settings.*

This paper investigates whether an urban morphological analysis can be used as a tool to assess and develop policy responses to the growing issue of multiple deprivations in data-poor cities of the developing world.

The study uses secondary data that was obtained as part of the Kaduna Masterplan Review carried out by the Max Lock Centre (MLC) at the

University of Westminster; Max Lock Consultancy Nigeria Ltd (MLCN); and other members of a consortium between 2008 and 2010 and published in 2015. The study is based on a morphological analysis of the city combined with household survey data to understand how the physical form of the city may be an indicator of poverty. The original morphological analysis of the city was carried out as part of the Masterplan Review and a subsequent development of this work studying urban change in Kaduna (MLC 2015). The household survey had a 97.7% response rate and was based on a sample of one in every twenty residential parcels that were recorded in the 2009 100% land use survey of the whole of the Kaduna urbanized area. The sample consisted of 11,672 households of which 11,409 responded.

These studies identified five distinct, primarily residential but to varying degrees mixed use, settlement types (STs), which provide an indication of the urban and sociospatial structure of the city. Details of the STs are outlined in Table 1 and Figure 1 shows their spatial distribution. The STs were established according to their plot size and shape and street pattern. A typology is not a continuous area of the city, but various neighborhoods that share the similar morphological characteristics of slums would probably constitute particular areas of certain typologies or clusters within a morphological area.

Unlike most studies of urban poverty, this one has the benefit of an in-depth, reasonably recent and disaggregated data set that offers a unique opportunity to investigate area and housing-based deprivations that can be used (directly or indirectly) to indicate evidence of urban poverty.

The aim of this paper is to examine and assess the variations of these deprivations experienced by residents of the city at a disaggregated level using an urban morphological approach. Half of the world's population live in urban areas and this is set to increase (UN Habitat 2009). The majority of the growth of urban populations will take place in cities located in the Global South (Mitlin and Satterthwaite 2013). Much of this population growth will take place in an uncoordinated or unplanned way and many of the urban dwellers will reside in informal settlements and/or suffer from urban poverty (*ibid.*).

Kaduna is an important secondary city within the context of Nigeria located in the rapidly urbanizing northern economic corridor between Abuja and Kano. The city has a population of approximately 1.5 million people growing by nearly ten times since the mid-1960s (MLC2015). Like other

**Table 1.** Kaduna's five (mainly residential) land development types

Settlement Typology	Characteristics	Area (sq. km)	Percentage of total settlement area (%)
1	Small (up to 15m x 20m) uniform plot sizes with regular gridiron pattern street layouts. These 'high density' layouts can result either from formally sanctioned plans or informal land subdivision.	5.2	1
2	There is no common plot size and shape for this ST. Where they can be identified, plots are generally smaller than ST 3. The street pattern is irregular and organic. Typically these are high-density traditional villages encompassed by the city or scattered irregular low-density settlements on the urban periphery.	23.2	13
3	Rectangular (15–20m x 25–35m), broadly adapted from the 50' x 100' standard plots characteristic of British Colonial development. The majority of this ST results from informal land subdivision rather than formal development.	98.1	56
4	Large plots, either rectangular or square in shape, generally 30m x 30m; this is typically found in the Government Reserve Area (now mainly privately occupied but generally with formal land title). The street layout is regular and generally laid out in gridiron pattern.	10.6	13
5	Site-based planned housing layouts.	37	21

Source: Max Lock Centre (2016).

Nigerian urban areas that have been subject to rapid population growth, there is a chronic deficit of social and physical infrastructure within the city. It is particularly interesting and worthwhile to examine urban poverty in Nigeria because the evidence shows that cities experienced a prolonged period of economic stagnation until the beginning of this century, but the proportion of the population residing in urban areas continued to increase. This trend is in common within many cities across sub-Saharan Africa following the imposition of structural adjustment policies in the 1980s and has been the subject of ongoing debate about the delinking of urbanization from economic growth (Kessides 2005).

In the cities of the Global North “small area” data from the census and other sources has long been available to identify those who are in need or in poverty, and the outcomes of such studies are widely used to inform planning and welfare policies and allocate resources on a spatial basis. However, for cities in developing countries, such data is not readily collected or available, in the form of a national census, for example (Mitlin and Satterthwaite 2013). The urban morphology of a city is argued to be a direct reflection of the society that created it; and the populations living within particular urban areas that share similar physical housing characteristics and conditions are observed to have substantially similar social and demographic characteristics, sufficient to target welfare-focused planning policies (Kuffer and Barrosb 2011; Taubenböck et al. 2009; Weeks et al. 2009). Urban morphology is far more accessible in comparison to data in the developing world and can be used as a tool for monitoring deprivation on an area basis (Kuffer and Barrosb 2011).

Although poverty is defined as a lack or deficiency of things required for human survival and welfare, there is no general agreement about what these are or how they should be defined (Rakodi 2002; Wratten 1995). Historically, since early sociological studies in Victorian England, the understanding of urban poverty focused on the concept of a lack of income to overcome these deficiencies (Rowntree 1901; Wratten 1995). This gave rise to the conventional means of measuring poverty, using income- or expenditure-based poverty lines. These are usually calculated without reference to those actually living in the situation, following an analysis of food costs (sometimes) making allowance for essential non-food costs (Bass et al. 2005; Wratten 1995). Poverty lines have been widely criticized because of their perceived inaccuracy and inadequacy to reflect the transient and heterogeneous nature of poverty (McKay and Lawson 2003). A participatory social development’s understanding of poverty is multifaceted, relying on qualitative assessments (Wratten 1995), and focusing on the processes underlying poverty and the ways in which poverty affects different subgroups among “the poor.” The recently emerging understanding of poverty reflects the integrated development approach that acknowledges that urban poverty is an outcome of a series of multidimensional and interlinked factors, as discussed below. It relies on a combination of quantitative and qualitative assessments requiring that programs for addressing poverty must be addressed in a holistic and coordinated way (*ibid.*).

In the dominant development discourse, poverty is viewed as a consequence of inequality in the distribution of socioeconomic resources (Mitlin and Satterthwaite 2013; Wratten 1995). In an urban context five key areas of inequality have been identified as differences in: income; housing quality; the ability to access material assets; political inclusion, and social status (Mitlin and Satterthwaite 2013). All of these dimensions are interlinked and dynamic, where a worsening of one is likely to have negative repercussions for others and living at the more deprived end of the inequality spectrum is likely to result in social exclusion (*ibid.*).

Composite poverty indicators have been developed that include a range of variables. These are direct methods for measuring poverty where it is assessed whether people satisfy a set of needs (Alkire and Santos 2014; Wratten 1995). Some of the most well-known multiple poverty-related indexes include the Index of Multiple Deprivation (IMD), developed in the UK, where poverty is defined in relative terms and a wealth of local area-based data is available; the Human Development Index (HDI), developed by the United Nations Development Program where intercountry development is assessed on three indicators of deprivation: life expectancy, adult literacy and the logarithm of purchasing power adjusted per capita GDP the logarithm of purchasing power adjusted per capita GDP (McGillivray 1991) the logarithm of purchasing power adjusted per capita GDP and the Multidimensional Poverty Index (MPI). The MPI “constitutes the first implementation of the direct method to measure poverty in an internationally comparable way, having such a wide coverage of developing countries” and is focused on deprivations experienced (Alkire and Santos 2014, 252). Although composite poverty indexes strive to better recognize the multidimensional nature of urban poverty, they are not without limitation. For example, they inevitably miss out certain elements of well-being or dimensions of poverty since only a finite amount of data can be included and, as with many studies of urban poverty, they do not necessarily include those living in urban poverty within their assessments (Alkire and Santos 2014; Rakodi 2002; Wratten 1995).

Poverty can be experienced in rural and urban settings but the way that poverty is experienced is different in each of these settings. Primarily this can be attributed to the fact that an urban area is a more monetized environment, which can cause or worsen poverty (Mitlin and Satterthwaite

2013). In addition, there are social, economic, demographic, political and physical distinctions between urban and rural contexts, with studies indicating that the scale and depth of urban poverty is underestimated (Mitlin and Satterthwaite 2013; Ravallion et al. 2007). Historically, rural poverty was a higher priority than urban poverty given that the great majority of the poor lived in rural areas, but the phenomenon of the “urbanization of poverty” is increasingly acknowledged (Ravallion et al. 2007). As a result, studies relating to urban poverty are becoming more significant on the agenda of the international community.

When understood in the context of urban morphology, urban form can be an indicator of the spatial distribution of poverty within cities. Housing represents the second most important human need, after food (Gambo et al. 2012; Mitlin and Satterthwaite 2013; Zainal et al. 2012), and adequate housing is recognized as integral to an adequate standard of living (Office for High Commission for Human Rights n.d.). One of the key characteristics of informal settlements is substandard housing, which refers to the physical condition of the dwelling and the quality of services and amenities (e.g., sanitation, waste collection, among other factors). Where households do not have access to safe drinking water, adequate sanitation and energy, housing is considered inadequate (Mitlin and Satterthwaite 2013). Mitlin and Satterthwaite (2013) argue that the quality of the living environment is central to the health of the occupiers and highlight the links between determinants of ill health and poverty that can both be linked to the quality of the built and natural environment in which the occupiers live. Poor housing can lead to inefficient use of land resources, facilitate the uneven distribution of wealth, accentuate poverty, and create imbalances in economic development (Gambo et al. 2012). Zainal et al. (2012) argue that housing conditions should be utilized as a socioeconomic indicator in the assessment or measurement of urban poverty.

There are many factors that erode the living environment, but some of the most fundamental aspects within contemporary discourse refer to poor quality and substandard housing; that is, housing that lacks basic infrastructure, such as adequate water supply and sanitation provision and inadequate access to clean fuels. These are all characteristic of informal settlements (Mitlin and Satterthwaite 2013; UN-Habitat 2003).

Although urban poverty became more central to the development discourse in the 1990s, it was not specifically addressed in the Millennium

Development Goals (MDGs). Reducing urban poverty is implicit in the wider poverty reduction goal and in the subsequent Goal 1 of the Sustainable Development Goals (SDGs). The MDGs give some implicit recognition to the strong spatial links between poverty and parts of cities in Target 7.C and Target 7.D. This becomes more explicitly urban in the SDGs in Target 11.2, which refers to cities and human settlements.

UN-Habitat (2003) defines slum dwellers as suffering from one or more of the following: inadequate access to safe water, sanitation and other infrastructure; poor structural quality housing; overcrowding; and insecure residential status. Based on this definition, for the purposes of this paper, a slum would be an area where the dwellers are clustered and the majority of households suffer from these deprivations. The data in this study covered the indicators that were considered the most important given the significance of public health in the multidimensional definition of urban poverty. The analysis is likely to have identified the majority of slum households but not necessarily all. Other factors, fuel and tenure, were analyzed to a degree to provide a more rounded picture of the housing conditions.

Lack of access to and quality of drinking water and sanitation are well-recognized indicators of, and integral to, poverty and contribute significantly to poor health (Garland et al. 2007; Mitlin and Satterthwaite 2013). The World Health Organization (WHO) and the United Nations Children's Emergency Fund (UNICEF) define improved drinking water as one that is protected from outside contamination through its construction or the use of interventions; they define improved sanitation as that which hygienically separates human excreta from human contact. Research has shown that it is more likely that the urban poor lack access to adequate water and sanitation infrastructure, primarily due to the informal, unplanned, uncoordinated and organic way in which the neighborhoods where they reside develop (McGranahan 2007). The issue may be compounded if local government prevents the infrastructure from being upfitted (*ibid.*). Without formal access to an adequate supply of water reliance is directed towards private, small-scale distributors or open water sources that may be unregulated and from unprotected sources (*ibid.*).

Lack of sanitation is an important indicator of poverty and squalid sanitation facilities make residents more vulnerable to contagious disease outbreaks with implications on life expectancy (UN-Habitat 2003). In African slums, pit latrines are the prevailing means of sanitation provision and their

widespread use has notable repercussions in terms of drinking water contamination and issues of long-term management and poor health (Katukiza et al. 2012).

Fuels for power can be classified in terms of their “cleanness,” that is, on the basis of how polluting they are when burnt (Mitlin and Satterthwaite 2013). A major repercussion of reliance on dirty fuels is the high level of indoor pollution, which has severe consequences for the health of the occupants. Evidence shows that there is a relationship between the shift away from dirty fuels use and progression out of poverty; that is, reliance on dirty sources of fuel is an indicator of poor infrastructure, low quality housing, and poverty (Mitlin and Satterthwaite 2013).

## DATA ANALYSIS AND FINDINGS

### **Sanitation**

According to the National Bureau of Statistics, Nigeria (NBS 2012), 88.4% of homes in Kaduna had a toilet inside their dwelling. However, the present study portrays a very different picture: it was found that only 22.4% of the surveyed households had a toilet inside their dwelling; 65.3% had a toilet outside their dwelling that was covered; and 11.7% of households had a toilet outside their dwelling that was uncovered (these figures do not take into account their type of toilet or whether the facility was shared or private).

For context, with respect to the types of facility to which households have access, the findings of this study are presented in Table 2 along with the findings of the *Living Standards Measurement Survey (LSMS), 2012–2013* and the *Annual Abstract of Statistics* (NBS 2012, 2014). The LSMS survey found that WCs were the most frequent form of sanitation provision in urban areas of Nigeria, followed by covered pit latrines and ventilated improved pit latrines (VIPs.) Conversely, the data from this study shows that covered pit latrines are found in nearly half of all households and only a third of households have access to a WC. The NBS study found that covered pit latrines were the most common, followed by uncovered pit latrines and then WCs. The findings from the data used in this study are consistent with other research undertaken in Nigeria showing that pit latrines are the prevailing means of sanitation provision in African urban slums (Katukiza et al. 2012).

However, it should be noted here that each study presents its findings in different scales or units. Kaduna state is largely rural, while the data used in this study is related solely to the urban area; these differences will be evident as contrasts in the findings between studies, given the vastly different pressures on land between urban and rural settings. The LSMS survey presents its findings by region and by urban or rural area; given the urban context of the household survey data used in this study, the urban data from the LSMS is considered more comparable and relevant.

The WHO and UNICEF Joint Monitoring Programme (JMP) also have data from 2015 in relation to sanitation provision in Nigeria. The findings of this study are presented alongside the JMP data in Table 3.

In the Kaduna Household Survey, 38% of the population have access to improved sanitation facilities, which is higher than the percentage presented in the JMP's most recent work but not hugely different. The data from this study shows that 60% of the population share sanitation, of which the health and long-term management issues are documented (Katukiza et al. 2012).

Bringing this back to settlement types (STs; see Table 1), STs 4 and 5 have a much higher proportion of households with access to improved sanitation facilities, over 80% and over 90%, respectively, which in this study were considered to be their own private toilet. The proportion of households that have access to improved sanitation facilities were similar between STs 1, 2, and 3 – ranging from 30% to 38%, but, by and large, sanitation provision is via shared facilities; such lack of sanitation provision is an indicator of poor quality housing, informal settlements and urban poverty (UN-Habitat 2003). According to this study, Kaduna is close to eliminating open defecation but is still a long way from achieving universal sanitation provision.

### **Water Sources**

The importance of consistent definitions and categorizations could not be clearer than is evident in Table 4. The results of both the JMP and the NPC surveys appear broadly consistent, yet the findings of the household survey are somewhat different. In the NPC report, bottled water is included as an “other improved” source of water, but in the JMP bottled water is included as “other unimproved.” This study has classified bottled water as “other unimproved,” as per the JMP study and 14.7% of the households in the city rely on bottled water as a water supply. The NPC also distinguishes

**Table 2.** Toilet provision in Kaduna

Type of toilet	LSMS (%)	NBS (%)	Household Survey (city) (%)
None	12.9	0.8	0.9
WC	49.4	7.5	33
Covered pit	27.8	55.3	49.4
Uncovered pit	1.9	27.7	11.2
VIP	6.5	0.5	5.4

Source: National Bureau of Statistics, Nigeria (2012, 2014).

**Table 3.** Toilet provision in Kaduna according to the JMP and Household Survey

Type of sanitation provision	WHO and UNICEF JMP (%)	Household Survey (%)
Improved	33	38
Shared	38	60
Unimproved	14	21

Source: WHO/UNICEF (2015).

**Table 4.** Sources of water in Kaduna

Sources of water	JMP (%)	NPC (%)	Household Survey (%)
Piped on to premises	3	5.5	6
Other improved	78	70.1	9
Combination of other improved and other unimproved			34
Other unimproved	16	20.5	51
Surface water	3	3.7	0

Source: WHO/UNICEF (2015) and National Population Commission (NPC) [Nigeria] and ICF International (2014).

**Table 5.** Sources of fuel for lighting

Type of fuel	LSMS (%)	Household Survey (%)
Firewood	1.1	
Grass	0.3	
Kerosene	14.8	38.0
Electricity	75.0	90.0
Generator	3.2	12.0
Gas	0.1	
Battery	29.3	
Candles	0.8	8.5

*Source:* National Bureau of Statistics, Nigeria (2104).

between protected and unprotected sources of water but this distinction was not available from the data used in this study. The implication of this lack of distinction is obvious when it comes to analyzing the data and is evidence to support the need for consensus on the definitions of key terms. Seventy-two percent of the households in Kaduna rely on a well as a source of water, but it is not known whether the wells are protected or not. This data has been categorized as an “other unimproved” source of water consistent with the JMP, but the findings would be somewhat different if the wells were demonstrated to be protected sources of water.

The data in this study with respect to water sources shows that half of the population of the city rely solely upon unimproved sources of drinking water (water vendor, bagged or bottled water or a well). Less than 10% rely solely on mains water for drinking but 14% rely on a combination of sources including mains water. This says two things: first the infrastructure system is inadequate in terms of its coverage across the city; and second even where there is a mains water supply it is in itself inadequate, given that households have to rely on other sources to complement mains water. The data does not allow for analysis of why or how the mains water supply is inadequate, that is, whether the issue is reliability, quality or price.

The largest proportion of households that rely on mains water only is found in ST 5, closely followed by ST 4; this is also true of households that

rely on mains water and another source of water. Conversely, STs 2 and 3 have the largest proportions of households that rely upon unimproved drinking water sources only, which accounts for more than 50% of the households in each ST. These STs have the smallest proportion of households that rely on private mains water only, but it is worth recognizing there are households in both STs that do rely solely on private mains water. This pattern reflects the notion that a lack of access to adequate water is often spatially concentrated in deprived areas, which is compounded by the fact that these citizens often have a weak voice in political systems (McGranahan 2007; Mathur 2014; Mitlin and Satterthwaite 2013).

No indication was provided in terms of which source of water represented the household's primary source, and many households stated that they relied on numerous sources, so gauging the primary source is impossible. In terms of actual numbers, unimproved drinking water sources were the greatest cited sources of water, with 14,260 counts of people buying water from water vendors, buying bagged or bottled water or using wells across all STs. This number is larger than the total number of households because many of them relied upon more than one of the above sources. This is a clear portrait of a city where there is a great need to improve the water infrastructure system.

### **Fuel Sources**

Data was collected on the sources of fuel for power and for lighting. The LSMS provides data on sources of power for lighting and the NPC survey provides data on sources of power for cooking. The findings of this study are presented alongside the findings of the aforementioned studies.

The findings of this study are consistent with the findings of the LSMS, showing that electricity is the most widespread source of power for lighting in all STs. Kerosene, however, was used by a greater percentage of households in STs 2 and 3 (47.1% and 37.5%, respectively) and fewer in STs 4 and 5 (15.6% and 17.5%). The findings in this study support the notion that there is a relationship between the progression out of poverty and the shift away from dependence on dirty fuels for power (Mitlin and Satterthwaite, 2013).

Although the specific percentages found in this study regarding sources of fuel for cooking are not the same as those presented in the NPC report, the overall patterns are comparable; that is, the most widely used fuels are kerosene and wood. Looking at the use of fuel for cooking in terms of STs,

**Table 6.** Source of fuels for cooking

Types of fuel	NPC (%)	Household Survey (%)
Electricity	0.7	3
Gas	4.6	6.1
Kerosene	47.6	63.1
Coal	0.7	
Charcoal	5.3	2
Wood	37.9	57.9
Organic material (dung)	0.2	0.2
Households using solid fuel for cooking	44.1	31%*

Source: National Bureau of Statistics, Nigeria (2104).

\* Additional 28% use a combination of solid and liquid fuels.

6.2% and 7.1% of households in STs 4 and 5 use electricity, which is higher than households in STs 1, 2 and 3; the same is true of gas. Conversely wood is used as a cooking fuel by a greater percentage of households in STs 1, 2 and 3 (66.6%, 69.2%, and 56.9%, respectively). The smallest difference in terms of percentage of households using a specific fuel for cooking is for those using kerosene, which ranges from 61.4% of households in ST 2 to 76.0% of households in ST 5.

The data shows that a greater percentage of households in STs 4 and 5 rely solely on mains electricity for lighting and solely upon clean fuels for cooking. It also reveals a widespread electricity system, as more than half of the households surveyed rely on mains electricity only, and if not rely on mains electricity with one other source. The data does not reveal which source is the primary means of providing power for lighting, but reliance on more than one fuel indicates that the primary source of power is inadequate which may be in terms of reliability, price or quality; data from the LSMS and NPC shows that the electricity network is not reliable and households are subject to frequent power cuts. ST 2 has the largest percentage of households that rely on one source of electricity that is not mains electricity; as this settlement type is informally planned and organic it was

likely constructed without the relevant infrastructure that does not appear to have been retrospectively upfitted.

The data shows that the greatest percentages of households that rely only on clean fuels for power are found in STs 4 and 5, and the greatest percentages of households that rely only on unclean fuels for power are found in STs 1, 2 and 3. A similar proportion of households across all STs rely on a mix of clean and dirty fuels for power.

## **Conclusions**

In data-rich cities of the developed world, there are many sources of information that can identify neighborhoods experiencing deprivations, and urban regeneration efforts and funding can be targeted at priority areas. In most cities in the developing world such disaggregated data is rarely available and, as a result, targeted poverty-focused policy interventions remain constrained; yet slum areas represent the largest and fastest growing proportion of rapidly expanding urban areas. Under these conditions, there is little opportunity for strategic targeting of very limited public funds towards particular neighborhoods and particular sectors where they can have the widest and most catalytic impact.

On the basis of the above analysis ST 2 has the most households that suffer deprivations characteristic of informal settlements, in terms of the definition and indicators utilized in this study, and STs 1 and 3 have similarly high proportions of households suffering from these deprivations. In terms of urban morphology STs 1, 2 and 3 are characterized by high density layouts ST's 2 and 3 have an organic form with informally subdivided plots and ST 1 is more regular resulting from either formally sanctioned plans or informal subdivision. Conversely STs 4 and 5, which have a regular and planned urban form, have far fewer households suffering from the deprivations characteristic of informal settlements although they are not completely free from these deficiencies. These findings are consistent with the argument that the urban morphology of a city provides an indicator of the socioeconomic characteristics of the population residing therein (Kuffer and Barrosb 2011; Taubenböck et al. 2009; Weeks et al. 2009). However, further analysis beyond the limited scope of this study would be necessary to isolate the worst neighborhoods that need to be prioritized for upgrading policies. Although the sample household survey data alone is probably insufficient to do this on a systematic basis, combined with the analysis of

the data by administrative area in the Master Plan Study Appendix (MLC 2015, Annex E) and morphology-based analysis of population density, an initial identification of neighborhoods for priority upgrading is relatively easy to achieve.

If poverty is measured solely on the basis of income, then 62.6% of the Nigerian population, as of 2009, live in poverty (UNDP, 2013). However, based on the assessment presented in this paper, 81% of the population of Kaduna lack access to improved sanitation facilities and 76% lack a connection to a mains water supply, both of which are traits of urban poverty; and the percentages of households lacking these facilities is higher in STs 1, 2 and 3 in comparison to STs 4 and 5.

It is clear that there needs to be a cohesive approach to addressing the infrastructure deficits within the city, but the benefits of concentrating the improvements in the areas that are characteristic of informal settlements are likely to impact the largest proportion of people in need and offer improvements to their quality of life, which goes far beyond the quality of the built environment.

Poverty lines cannot fully capture the dynamics of urban poverty and popular composite poverty indices have not yet included physical components of urban poverty such as environmental degradation. Housing conditions, however, provide an insight into the physical conditions of the population and are intrinsically linked to health and other aspects of urban poverty. This study has added to existing literature that argues that socio-economic characteristics and urban morphology are correlated and also bridges the gap in the literature by including indicators of environmental quality within studies of urban poverty.

There is an international commitment to eliminate poverty and improve cities for those residing within them through the Sustainable Development Goals. The data has shown that Kaduna, Nigeria, suffers from severe infrastructure deficits in terms of water and sanitation provision across the city and that are particularly acute in STs 1, 2 and 3. Being able to identify deprived areas using urban morphology is faster and less resource intensive than undertaking surveys, and changes in the built form can be more easily tracked using satellite imagery. To conclude urban morphological data is far more accessible and easier to obtain in the developing world and this study has shown that it may be used as a tool for generating accurate and localized data to inform integrated development policies at varying scales.

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# Leveraging Public Land in India for Affordable Housing and Urban Redevelopment

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## ABSTRACT

*This paper investigates and delineates strategies for leveraging public land<sup>1</sup> in India to achieve public policy objectives of promoting affordable housing delivery and urban redevelopment. The township under Bhilai Steel Plant (BSP), developed and managed by Steel Authority of India Limited (SAIL), a central public sector undertaking (PSU), is used as the site to contextualize the study and present recommendations. The research is divided into two interdependent analyses: the first part is an ex-post analysis of the past and current leasing policies of SAIL in order to understand their objectives and evaluate their outcomes; the second part analyzes the current built form and landholdings of the site, and determines the surplus land. The paper concludes with recommendations for land leasing strategies for the surplus land identified in BSP Township, in order to achieve the desired objectives of affordable housing delivery and urban redevelopment.<sup>2</sup>*

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1 Public land here refers to landholdings under any government entity.

2 The fieldwork for the research was supported by MIT International Science and Technology Initiatives -India, and was conducted in June-July 2016.

## INTRODUCTION

According to the *Report of the Technical Group on Urban Housing Shortage (TG-12)* (Government of India 2012b), the total housing deficit in urban areas in India was estimated to be 18.78 million units, out of which economically weaker sections and low-income groups constituted 95.8% of the units. This housing gap is expected to grow annually at 6.6% and reach 34.1 million units by 2022 (RNCOS 2015). The Government of India (GOI) recently announced its “Housing for All” scheme, through which it plans to bridge the housing gap in urban areas by 2022. A study conducted by Sarkar et al. (2016), estimates the financial outlay required in meeting the 2012 urban housing shortage to be 19% of India’s GDP.<sup>3</sup> Their study also shows that if land costs were deducted from the cost of housing (assuming all the units are produced with zero land cost), the financial outlay required would come down to 9% of the GDP. Thus, to achieve housing for all by 2022, the GOI would need to invest at least around 2% of its annual GDP for the next five years. But the current outlay for housing in the budget is a meager 0.13% of the GDP (ibid.), which is fifteen times less than the required 2%. Apart from affordable housing, urban infrastructure and services also have huge investment requirements, as highlighted by the High Powered Expert Committee report (HPEC 2011), which estimates the required infrastructure investments for the twenty-year period, 2012–2031, to be Rs. 39.2 trillion<sup>4</sup> (at 2009–2010 prices). The annual urban infrastructure capital spending per capita needs a jump of eight times and the per capita operational spending needs to be more than three times their current levels (McKinsey Global Institute 2010). Given this huge gap in the affordable housing and urban infrastructure delivery in Indian cities, new alternate financing and development mechanisms need to be investigated. This study is a step in this direction and examines strategies to leverage vacant and underutilized public land in urban areas for affordable housing delivery and urban redevelopment.

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3 India’s 2012 GDP was Rs. 111.6 trillion.

4 HPEC did not include land acquisition cost due to the volatility in the land prices.

Various Indian government entities, and public sector undertakings (PSUs)<sup>5</sup> own huge land holdings in many cities, large portions of which are either vacant or are underutilized. Sarkar et al. (2016, 9) posits, “The locational value weighted quantum of such land in the possession of government could in many cities—Kanpur, Pune, Dehradun, [and] railway towns, rival or even exceed the land currently used by citizens.” Since government entities have been reluctant to surrender their landholdings in the past (Peterson and Thawaker 2013), public land leasing can be an important mechanism to unlock the economic potential of the surplus holdings in urban areas, as it allows the respective government entities to retain ownership of the land. Kolkata Port Trust recently announced its plan to lease 2,724 acres of land in prime urban areas in Kolkata and Haldia, and is expected to earn a minimum revenue of Rs. 10 billion (*Times of India* 2015). Indian Railways has set a revenue target of Rs. 190 billion by 2021, which it plans to achieve by leasing its surplus land for commercial and residential use (*Financial Express* 2016). Table 1 presents a summary of the major land owning government entities.

#### SHIFTING ATTITUDE OF THE CENTRAL GOVERNMENT TOWARDS PUBLIC LAND ALIENATION

Peterson and Thawaker (2013) documented the policy shifts and the changing attitude of the central government regarding the alienation of public land. Prior to March 2011, individual government institutions could make decisions regarding land alienation,<sup>6</sup> but after a series of high profile scams, the central government froze all decentralized decision-making (*ibid.*). After the freeze, apart from intergovernmental land transfers, all decisions regarding land sales, long-term land leases, and contribution of land for public private partnerships (PPPs) and to infrastructure concessionaires needed their approval (*ibid.*). The prime minister’s intervention in August 2012 has allowed public land to be transferred for infrastructure projects without the need of central government approval on a case-by-case basis,

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5 PSUs in India refer to state-owned enterprises. They can be owned by the Government of India, or state governments, or both.

6 Cabinet ministers had the right to intervene if the stakes were high.

**Table 1.** Summary of the major land owning government entities

Government Entity	Landholding Details
Indian Railways	43,000 hectares have been declared as surplus by railways
Ministry of Defence	721,150 hectares of land across various cities are occupied by only 2,091,734 people. This can be deemed surplus on the basis of population density that is around 290 people per sq. km., while the minimize density to be classified as a town in India is 500 people per sq. km.
Airports Authority of India	Airports Authority of India manages 24,000 hectares of high value land around major airports
Port Trusts	100,000 hectares in 13 major ports, a significant portion of which are in urban areas and are underutilized
Public Sector Undertakings (PSUs)	95,100 hectares is surplus with 58 central public sector undertakings

Source: Peterson and Thawaker (2013), Sarkar et al. (2016), *Indian Express* (2015).

**Table 2.** Stylized study to estimate the capacity of the surplus PSU landholdings

City	Population density (persons per sq. km.)	Household density* (Households per sq.km.)	Total Household capacity of surplus PSU land if built at the given city density
Mumbai	29650	7413	7,049,288
Kolkata	23900	5975	5,682,225
New Delhi	14350	3588	3,411,713
Chennai	11,050	2763	2,627,138
Bangalore	10100	2525	2,401,275
Hyderabad	9100	2275	2,163,525

Source: Population density data accessed from <http://www.citymayors.com/statistics/largest-cities-density-125.html>.

\* Household density was calculated using 4 as the average household size. According to the census 2011, the average Indian urban household size is slightly over 4.

but this was not extended to land sales or long-term leases unconnected to infrastructure projects (*ibid.*). The *Report of the Committee on Roadmap for Fiscal Consolidation* (Government of India 2012a) suggested monetization of underutilized government land resources to finance urban infrastructure. To accomplish this, the report recommended setting up a group to work out the policy framework and institutional modalities.

According to the Department of Public Enterprises Survey (2013–2014), 95,100 hectares of land is currently unutilized by 58 central PSUs (in Sarkar et al., 2016). This surplus land was being considered by the central government to be used for infrastructure and industrial projects (*Indian Express* 2015). In the recent budget, the finance minister urged the PSUs to divest their land assets to release their asset value for investments in new projects. Based on this, the central government is currently finalizing a policy to create a land bank of surplus land with PSUs for auctioning (*Business Line* 2016a). Some PSUs are also considering utilizing their landholdings in city centers for social housing (*Business Line* 2016b). Table 2 presents the results of a stylized study, which estimates the capacity of the unutilized PSU landholdings. It shows the number of households that can be accommodated on the surplus 95,100 hectares of land, if built to accommodate the average population densities of the six densest Indian cities. More than 7 million households (37.5% of the total 2012 urban housing shortage) can be accommodated on these surplus landholdings if built to the average density of Mumbai. The findings from this study illustrate the enormous potential of the surplus land of PSUs (and other government entities), which could be leveraged to provide affordable housing.

## DATA AND METHODS

The data for the research was collected during the two-month fieldwork (June–July 2016) conducted in Bhilai Township, which was chosen as the site to contextualize the research. The author conducted semistructured interviews with personnel of various departments that come under Bhilai Steel Plant's Town and Services Department, the main body responsible for providing services to the township and implementing the leasing strategies. The author also studied pertinent documents and minutes of the meetings since 1997, in order to understand and document the policy shifts behind

the organization's land leasing strategies. The lease revenue generation and public works expenditure for the years 2014–2016 were also documented. Comprehensive desk research was undertaken to study the leasing policies and affordable housing practices of various countries including China, Netherlands and Sweden. Two analyses were conducted in order to determine the efficiency of the current leasing policies of BSP, and the surplus land available in the township. Based on these two analyses and the desk research, recommendations were outlined to leverage the surplus BSP Township land for affordable housing and urban redevelopment.

## THEORETICAL FOUNDATIONS: LAND VALUE CAPTURE AND PUBLIC LEASEHOLDS

The basic premise behind land value capture is that the value attributable to the original production capacity of land as paid for by the owner and any improvements made on the land by the owner should be retained by the owner, while the value created by public investments in infrastructure should be captured and used to defray the costs of the investments (Ingram and Hong 2012). The government acting on behalf of the larger community should retain a share of the value created by regulatory changes and economic growth (*ibid.*). The idea of land value capture can be dated back to Henry George's idea of a single tax on land that is based on the premise that land value is created due to the collective action of the city and thus should be owned collectively by the citizens and not private owners. Through leasing public land, the government transfers the right to use the land to private (or other public) entities while retaining the ownership of land; in principle this allows them to capture the surplus land value (Hong 1996).

Susan Fainstein, in her essay "Land Value Capture and Justice" (2012), posits that public ownership of land offers the greatest potential to achieve equity for citizens through land development, albeit if certain other conditions are met. Many cities and countries have leased public land in order to achieve various public policy objectives. Public leasehold systems have been implemented to generate funds for financing urban infrastructure in Hong Kong and China; to promote affordable housing in Netherlands, Finland, and Sweden; to reserve land for the capital city of Canberra; and to regulate land use in Sweden (Bourassa and Hong 2003). An important aspect of

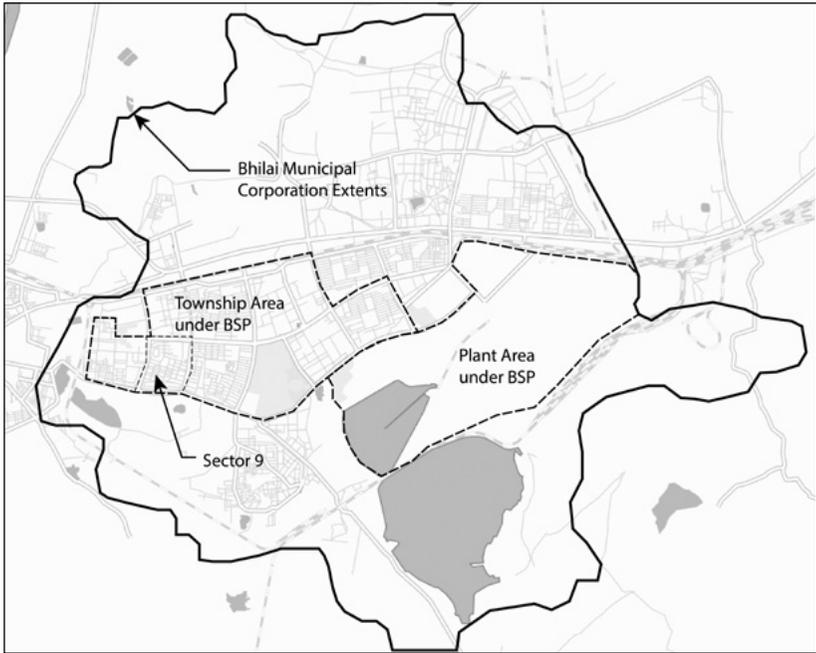
structuring the public leasehold system in order to achieve desired public policy objectives is delineating how different rights associated with property are distributed between the lessor (government) and the lessee (typically private entities). Hong and Bourassa (2003) present property in land as a bundle of rights comprised of the following elements: title of the land, and the right to use, develop, transfer, inherit, and benefit from the land. In a public leasehold system, the lessor (government) retains the title of the land, while other elements of the bundle vest either with the lessor or the lessee, depending upon how the leasehold system is structured.

A public leasehold system in which the government holds only the title of the land, and all other rights are transferred to the lessee for perpetuity at market rates, is very similar to a fee simple system; while a public leasehold system in which the government holds all the rights and transfers only the right to use the land on a temporary basis is very similar to an absolute public land ownership system (Hong and Bourassa 2003). Thus, conceptually, a public leasehold system can be understood as “a wide spectrum of multiple combinations of public and private ownership of land” (ibid., 9), two ends of which are fee simple and (absolute) public ownership of land. From the case studies of Hong Kong, Canberra, and The Hague, we can gather that public leasehold systems are not static land tenure arrangements but a set of “malleable land tenure arrangements,” which allows the lessor and the lessee to renegotiate the allocation of land rights (ibid., 10).

## THE SITE

The site selected for the study is the township under Bhilai Steel Plant (BSP), one of the five integrated steel plants run and operated by the Steel Authority of India Limited (SAIL), a central PSU. BSP, one of the largest steel plants in the country, is responsible for contributing the largest share of SAIL profits (*Business Standard* 2013). The land for the township was transferred to BSP in 1959 on a freehold ownership basis, under the provisions of the Land Acquisition Act, 1884. The total landholding of BSP can be divided into two major areas: the township area and the steel plant area, and falls under the larger jurisdiction of Bhilai Municipal Corporation (BMC), which is the urban local body. Figure 1, shows the total land holding of BSP in the context of the larger boundary of BMC.

**Figure 1.** BSP Township Context



*Source:* OpenStreetMap contributors.

*Note:* The boundaries highlighted in Figure 1 have been approximated as per the Map accessed from the Bhilai Municipal Corporation’s website, and are for the purpose of illustration only.

For the purpose of this research, the analysis is restricted to the township area of BSP, which is divided into 18 sectors, which are further divided into smaller plots. These plots can be broadly categorized into two types: (1) plots that are maintained by BSP and are utilized for its “own use”; and (2) plots that have been “leased out” to other organizations or households. The Town Services Department (TSD) of BSP is responsible for providing infrastructure and other services including water supply and electricity to all the plots within the township. It is also responsible for maintenance of the plots for its own use, while respective lessees undertake maintenance of their leased out plots. Table 4 presents a

**Table 3.** Area Occupied by BSP Township and Steel Plant Area

Entity Name	Area
Township area under BSP	35.7 Square kilometers
Steel Plant area under BSP	36.2 Square kilometers

*Source:* BSP official documents.

**Table 4.** Land Plot Types in BSP Township

Own Use	Leased Out
Plots occupied by subsidized rental housing for employees (33,790 units)	Plots leased out on long-term residential leases (4500 units)
13 Public Parks	Educational/cultural/religious institutions
110 Public buildings including health centers, hospitals and clubs	Other government entities including nationalized banks and oil companies
9 sq.km. of dense tree plantation	Cooperative housing societies

*Source:* BSP official documents.

summary of these two types of land plots. Bhilai Township comes within the larger Durg-Bhilai Urban Agglomeration (UA) with the total population of the UA slightly above 1 million (Census of India 2011). Like many other government landholdings, the township is a large contiguous land parcel at the heart of the city and has enormous surplus land potential. Lack of supply of serviced land has been cited as one of the main impediments to successful affordable housing delivery in India (NAREDCO 2008; Gopalan and Venkataraman 2015). Thus redevelopment of such underutilized public landholdings in urban areas can be an important source of serviced land delivery for affordable housing.

#### ANALYSIS 1: EX-POST ANALYSIS OF LEASING OF SAIL (BSP) LAND

To understand the policy objectives of SAIL behind leasing its land, and to map the gradual changes in the leasing conditions over time, the author

studied pertinent official documents from 1997 onwards. The lease conditions are decided by the SAIL Board of Directors (BOD) and are implemented by the individual steel plants including BSP. In July 1997, due to high cost escalation since 1979,<sup>7</sup> BOD proposed a new basis for calculating the initial premium amount, the annual land rent and the annual service charge to be paid by the lessee. The premium was calculated on the basis of two factors: (1) cost of “land proper” and (2) cost of “infrastructure” required, which were fixed at Rs. 100,000 per acre, and Rs. 240,000 per acre, respectively (at 1997 prices). Thus, the total premium amount for an acre of land equaled Rs. 340,000. The cost of infrastructure included cost of leveling the site, internal roads, sewer, storm water drainage and street lighting. For subsequent years, the “land proper” part of the premium was to be compounded annually at 12%, whereas the “infrastructure” part of the premium was to be compounded annually at 10%. The annual land rent was fixed at 1% of the initial premium amount, while the service charge was calculated on “no profit/no loss basis.”

These lease conditions were applicable to land leased to private parties, other government departments, and public sector undertakings. Lease conditions were relaxed for educational and religious institutions and other non-commercial entities. The lease premium for such institutions was fixed at one-fifth of the applicable premium (which was Rs. 340,000, as calculated above), and the annual land rent was charged at 0.5% of the applicable premium. The leases were granted for a period of 33 years, with the provision of renewal for two more periods of 33 years. The lease conditions were modified in September 2000, by the then BOD. The compounding factor for the land proper and infrastructure parts of the premium was decided to be a uniform 10% per annum, based on the wholesale price index<sup>8</sup> (WPI) for the last three years. The premium amount for the commercial education institutes was increased from one-fifth to one half of the applicable premium amount, while the premium charged to non-commercial educational institutes was still maintained at one-fifth of the applicable premium. The BOD also suggested that as SAIL was providing land at concession rates to non-commercial education institutes, these institutes

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7 Before 1997, the last set of instructions on SAIL land leasing was issued in 1979.

8 10% was more than the changes in WPI for the past three years.

should reciprocate with concessions in the form of reservation of seats and a concessional fee to SAIL employees. The annual service charge was also set at 2% per annum of the infrastructure part of the premium, from the earlier no profit/no loss basis.

In December 2002, the lease conditions were modified again. For the first time, the lease premium was set to be calculated on the basis of the market value of the land parcel, as per the valuation done by the Housing Development Finance Corporation (HDFC), the agency appointed by SAIL to evaluate its real estate. Lease renewal conditions, which were ambiguous in the earlier lease conditions, were also clearly delineated. Renewal charge was set at 25% of the applicable land premium prevailing on the date of the renewal. In 2001, SAIL decided to lease out 25% of the 100,000 residential units in all of its townships to its employees and ex-employees. This was undertaken as a part of its business restructuring plan, which involved disinvesting SAIL's non-core assets. Another reason stated for this move was that by 2003–2004, SAIL would have more residential units than required, and thus it decided to lease a specific amount of them. Overall 4,500 residential units were given on long-term leases to BSP employees who applied for the scheme. Table 5 delineates the current non-residential lease conditions practiced by SAIL.

**Table 5.** Summary of the Existing (Non-Residential) Lease Conditions of BSP SAIL

Lease Term	Lease Premium	Annual Land Rent (ALR) and Service Charge (SC)	Renewal Conditions	Ownership of Site Improvements	Right to Repossess Land
33 years with a provision of renewal for 2 like periods	Calculated based on assessed land value	ALR set at 1% and SC set at 2% of the applicable land premium	Lease renewal charge set at 25% of the existing land premium	Lessee is expected to remove the assets created when the lease ends; else they will vest with SAIL.	SAIL has the right to repossess land for its own use or public purpose with 1 month notice

Source: BSP official documents.

Analysis of the leasing practices of SAIL from 1997 onwards hints at the evolving policy objectives behind them. Prior to 1997, land was leased at nominal rates to commercial, educational, and recreational organizations that provided various amenities and social infrastructure for the township residents. Since 1997, the lease conditions have been constantly modified to improve their revenue-generating capacity while at the same time allowing concessions to non-commercial educational and religious organizations. A major shift in the land leasing policies came in 2001, when SAIL decided to monetize its surplus residential units by alienating them via long-term leases. Around the same time, the method to evaluate the lease premium and renewal charges was modified and was set to be decided on the basis of the market value of the land. These policy shifts point to the underlying efforts by the SAIL authorities to improve the revenue-generating capacity of its leased landholdings. In order to evaluate the importance of lease revenue as a source to finance public works, yearly lease revenue as a percentage of annual public works expenditure for BSP was calculated. The results are presented in Table 6. For the last three years, total lease revenue generated has been just under 14% of the overall public works expenditure of BSP Township. A similar analysis of Hong Kong for the years 1996–2000, shows that the Hong Kong government generated on average 130% of its public works expenditure through lease revenues (Hong 2003, 161).

## ANALYSIS 2: EXAMINING SURPLUS LAND POTENTIAL OF BSP TOWNSHIP

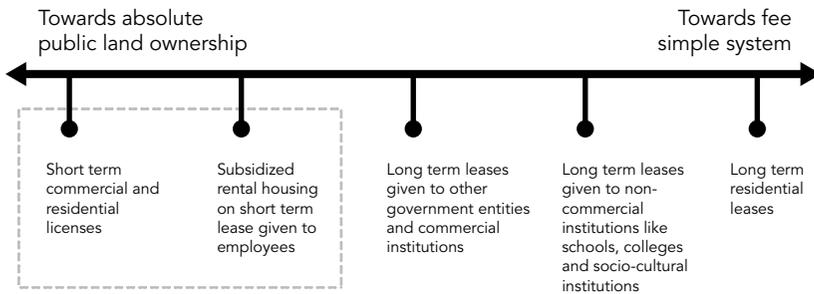
Ballaney et al. (2013) present a methodology to evaluate the extent of surplus public land in Ahmedabad that is potentially marketable. Their analysis suggests that the value of the total identified marketable surplus public land exceeds the next twenty-year infrastructure investments required for Ahmedabad. Although the majority of the land in Ahmedabad is privately owned with noncontiguous public land parcels spread all across the city, BSP Township is a contiguous public landholding within the larger extent of BMC. As mentioned earlier, public leasehold can be understood as “a wide spectrum of multiple combinations of public and private ownership of land” (Hong and Bourassa 2003, 9). Thus, in order to evaluate the extent of surplus “public” land in BSP Township, we need to study the prevailing

**Table 6.** Annual Lease Revenue Generated vs Annual Public Expenditure for 2014–2016

Year	Residential Lease Revenue	Commercial Lease Revenue	Institutional Lease Revenue	Total Lease Revenue	Total expenditure on public works	Lease Revenue as % of Public works Expenditure
2014–2015	12,27,995	14,41,976	4,31,34,685	4,58,04,656	487,000,000	9.4%
2015–2016	12,40,882	14,41,976	4,39,44,134	4,66,26,992	342,700,000	13.6%
2016–2017	12,76,072	14,69,388	5,00,44,317	5,27,89,777	279,100,000	18.9%

Source: BSP official documents.

**Figure 2.** Spectrum of Leasehold Structures Prevalent in BSP Township



Source: Adapted from BSP official documents.

leasehold structures and establish the types of land plots that can be considered “public.” Figure 2 presents the various public leasehold structures prevalent in BSP Township.

Land plots, which fall under the highlighted categories in Figure 2, are considered public for purposes of this study. This analysis has been restricted to Sector 9 of BSP Township to keep the scope of the study manageable,

**Figure 3.** Land-use Map for Sector 9, BSP Township



*Sources:* Adapted from Layout plan for Sector 9 and other official BSP documents.

given the time and resource constraints. This methodology however can be extended to the entire township in order to determine the total surplus BSP township land. The location of Sector 9 in reference to the township is highlighted in Figure 1. Although a comprehensive plan for the entire BSP Township with granular plot-level details and land use was not available, the layout plan of individual sectors delineating individual plots was available. Using such a layout plan as the base reference, a vector map for Sector 9 was drawn using CAD. This step allowed generating plot size information for all plots in the sector. The layout map also contained information regarding the different housing typologies in Sector 9, which was cross-checked with another dataset provided by BSP, comprising built up areas of all properties in the township. Finally, physical survey of the site was done to cross-check all the information and determine the land use of all the plots in Sector 9. The information was consolidated in the form of a land-use map (Figure 3).

**Table 7.** Land-use Area Analysis for Sector 9

Entity Name	Area (in sq.mt)	Percentage of total area
Sector 9 Extends	1,045,557	N/A
Residential	383,593	36.7%
Commercial	15,226	1.5%
Institutional	31,775	3.0%
Forest/Dense Plantation	21,8423	20.9%
Open fields/unprogrammed space	186,247	17.8%
Roads	210,293	20.1%

*Source:* Adapted from Layout plan of Sector 9 and other BSP official documents.

**Table 8.** Built-up Area Analysis for Sector9

Entity Name	Total Land area (in sq. mt)	Total Built-up area (in sq. mt)	Floor-Area Ratio (FAR)*
Residential	383,593	53,115.4	0.138
Commercial	15,226	786.7	0.05
Total	398819	53902.1	0.135

*Source:* Adapted from layout plan of Sector 9, and other BSP official documents.

\*FAR is calculated as the total area covered by all floors on a plot by the plot area.

Land-use area and built-up area analyses were done in order to understand the current efficiencies of the built form, which helped in determining the surplus land (Tables 7 and 8).

Sector 9 is spread across 1.05 square kilometers and represents roughly 3% of the total area of BSP Township. Residential and commercial plots account for 38% of the land area, while two institutions (primary schools) cover 3% of the land area. Dense plantations form the periphery of the sector and occupy 21% of the land area. BSP Township is sparsely built with maximum height of buildings restricted to 33 feet. In the case of Sector 9, the majority

**Figure 4.** “Public” Plots Determined for Surplus Area Analysis



*Source:* Adapted from Layout plan for Sector 9 and other official BSP documents.

of the structures are single storied. The floor-to-area ratio (FAR) for sector 9 is a mere 0.135 (Table 8) and shows the gross underutilization of the land parcels.<sup>9</sup> Low FAR, uniform low densities, and spread out urban form are symptomatic of Indian cities and are a result of outdated urban regulations. FAR restriction increases the travel costs of people living in the outskirts and also adds an additional cost of providing infrastructure to the periphery of the city. Bertaud and Brueckner (2004) estimates that the welfare costs imposed by lower FAR on the citizens of Bangalore is 3%–6% of the household consumption, and may push many marginal households into poverty.

BSP Township was built more than half a century ago, and thus the ageing structures require regular maintenance. Many residential structures

9 This FAR may not exactly be representative of the average FAR of the township, which may be slightly higher. A more elaborate analysis needs to be undertaken in order to arrive at that.

**Table 9.** Cumulative ‘Public’ Land Area and Total Built Up Area On It

Total Land area: Commercial & Residential (in sq.mt)	Total Built-up area (in sq.mt)	Floor-to-Area Ratio (FAR)
387,852	50,364.4	0.149

Source: Calculated as per plots identified in Figure 4.

**Table 10.** Surplus Land Area Analysis (total land area= 387,852 sq.mt.)

Scenarios	No. of floors	Total BUA (sq.mt.)	BSP BUA (sq.mt.)	Surplus BUA (sq.mt.)	BSP Land (sq.mt.)	Surplus Land (sq.mt.)
FAR 1	2	387,852	50,364	287,488	50,364	287,488
FAR 2	4	675,704	50,364	625,340	25,182	312,670
FAR 3	6	1,013,556	50,364	963,192	16,788	321,064

Source: Total ‘Public’ land area is from Table 9.

in the township are dilapidated and have been deemed unsafe for inhabitation by the TSD of BSP. Thus, gross underutilization of land parcels along with ageing structures with high maintenance costs build a strong case for urban redevelopment in the near future. In order to explore the possibility of urban redevelopment of BSP Township “public” plots were identified (Figure 4) based on the spectrum of leasehold structures relevant in BSP Township (Figure 2). Institutional land parcels and residential plots given on long-term leases were not considered public land for the study and were omitted. Dense tree plantation, roads, and open fields were also not considered during surplus land area analysis. Table 9 presents the cumulative area of public land and the built up area on it.

In order to arrive at the surplus land area, three scenarios in which the “public” plots would be redeveloped, at FAR 1, 2 and 3, respectively, were considered. It was assumed that the built up area requirements of BSP would remain the same (50,364.4 sq.mt.), and the excess built up area and the corresponding land area would be deemed surplus. In all three cases, the ground coverage of the plots was assumed to be 50%. Thus, FAR 1, 2,

and 3 correspond to 2, 4, and 6 number of floors required. The results of the analysis are presented in Table 10.

The three scenarios arrive at their respective surplus land areas, assuming Sector 9 of the township undergoes redevelopment at higher densities. In order to arrive at the market value of this surplus land, the current market rate for land was needed. Since there was no recent record of any transactions or long-term leases issued by BSP on similar land plots, the actual market value of the land was not available. Thus, the land rate published by the government for the purpose of levying stamp duties during property or land transaction was used. This rate is called the circle rate and is updated on a yearly basis by the concerned government authority. The circle rate for the year 2016 for Sector 9 is Rs. 33,360 per square meter of land area. Thus, based on the circle rate, the approximate value of the surplus land for scenario 2 (FAR 2) is Rs. 10.4 billion. This value is around 37 times the FY 2016 public works budget of BSP Township and 197 times its lease revenue earned. Since this analysis applied only to surplus land in Sector 9, which constitutes only 3% of the total BSP Township, it can be safely assumed that the total economic potential of BSP surplus land will be many fold more than that of Sector 9.

## PUBLIC LEASEHOLD STRATEGIES FOR THE SURPLUS BSP TOWNSHIP LAND

Before delineating the leasehold strategies to leverage the potential of BSP surplus land for affordable housing and urban redevelopment, it is imperative to discuss the public policy objectives they are supposed to achieve. Recently the central government announced its plan to create a policy for documenting the surplus landholdings of PSUs for the purpose of auctioning. The main policy objectives behind this move are still unclear (*Business Line* 2016a). For this stylized example, the recommendations are designed to achieve the following objectives: (1) use public leasehold as an instrument to manage urban growth and shape land use, and (2) supply serviced land in urban areas for affordable housing and redevelopment.

Peterson (2013) emphasizes the role that specialized institutions can play in alienating public land in order to achieve desired public policy goals in India. Citing the examples of such institutions in Canada, Germany,

Singapore, and China, he posits that “quasi-governmental, professionally managed” companies that work transparently and at arm’s length from the government are in a better position to negotiate and work with the various stakeholders involved, provided such institutions have the backing of the government in implementing the policies. Currently the TSD of BSP is responsible for undertaking any redevelopment project in the township, provided the BOD approves the project.<sup>10</sup> Over the years TSD has developed an expertise in providing infrastructure and services in the township, but has very little know-how about implementing large-scale urban redevelopment projects. Thus, in order to achieve the above-stated objectives, constituting such an institution with qualified real estate professionals should be the first step taken by SAIL.

Urban redevelopment projects require large regular land plots in order to be efficient and achieve economies of scale. The public plots deemed surplus (Figure 4) are spread all over the sector. Thus, the technique of land readjustment (LR) should be applied in order to reconstitute the smaller land parcels into fewer contiguous larger parcels. Typically, the fragmented parcels of land are owned by various private owners and thus require multi-party negotiations in order for LR to be successful. In this case, BSP SAIL is the sole owner of the public plots identified, which in theory should help minimize the time and negotiation costs involved. LR is considered a self-financing mechanism, as a portion of the reconstituted land can be sold at market rates to generate revenues that can defray the costs involved. After a typical LR process, the total area of reconstituted land parcels is smaller than their original area, the difference being lost to the provision of new infrastructure to support development at higher densities. During the surplus land area calculations for Sector 9 (Table 10), the area earmarked for infrastructure has not been taken into account because the area covered by the current right of way and open/un-programmed spaces is 38% of the total sector area. Comparing this to town planning schemes—a hybrid LR method that is widely used in Ahmedabad, where 30–40% of the original area on average is used for infrastructure, public amenities, and also affordable housing (Sanyal and Deuskar 2012)—this seems to be a safe assumption. LR generally results in appreciation in land values due to improved

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10 In cases where land alienation is part of the redevelopment, approval from central government is required.

infrastructure, and greater carrying capacity of the reconstituted lands, which can thus be captured by SAIL. To carry out this process successfully, very often a “third party public, semi-public, or even private entity in the form of a trust with a mandate to carry out the development” is required (Smolka 2013, 49). Thus, a specialized institution put together by SAIL should be in a better position to deal with the complexities involved in LR.

Public leasehold systems can play an important role in shaping urban growth and the land use of a city. Currently the twenty-year development plan for the city of Bhilai is prepared by the Town and Country Planning (TCP) department of the state government. TCP consults with the TSD of BSP in order to determine the land use and other regulations regarding development in the township. If BSP SAIL gets a clear mandate from the central government to leverage its surplus land for affordable housing, then the negotiation process with TCP can be used to design specific bylaws to facilitate affordable housing delivery. This is especially relevant because, according to Value Budget Housing Corporation (VBHC), a major affordable housing developer in India, 6% of the housing costs are due to inefficient and out-dated bylaws (IDFC 2015).<sup>11</sup> These specific bylaws can be made a part of the leasehold agreement when the land parcels are leased out to private developers. This will help ease two major impediments to affordable housing delivery. First, building bylaws are often subjective and are left to the interpretation of the building approvals committee; having clearly defined bylaws in the leasehold agreement will help the developer better estimate the project costs, thus reducing the uncertainty regarding the project. Reduced uncertainty should also facilitate more efficient determination of the market value of the land parcel through auctioning. Second, delays in building approval are a major factor in rising price points of the final housing unit as they drastically increase the capital costs involved. Having bylaws and other building regulations included in the leasehold agreement provides the opportunity for the building approvals committee to be involved from the initial stage of the project, and thus should help in reducing approval times for affordable housing projects. Having relaxed bylaws for affordable housing and reducing the time required for building approvals can bring down the cost of the final unit by almost 30% (VBHC in IDFC 2015).

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11 VBHC stated this in reference to bylaws in Bangalore, but this issue plagues other parts of the country as well.

Mohanty (2016) mentions joint development mechanisms (JDMs) as a value-capture tool, which can be a very relevant tool in the case of the urban redevelopment of BSP Township. He states, “JDM is a partnership between a public authority and a private developer to build a real estate project on land owned and controlled by the public sector.” JDM allows “voluntary gain-sharing agreements negotiated prior to public investment” (Mohanty 2016, 224). This tool allows the public entity to capture the value of the land not just at the time of land alienation but also later, when developed residential units are sold. It can be especially successful if a specialized quasi-government institution is involved in the project on behalf of SAIL, which can leverage its real estate know-how throughout the project life and not just at the time of land alienation. In order to be successful, urban redevelopment of BSP Township would require both public and private investments. Getting private investments to build affordable housing can be a challenge, especially if there is demand for higher priced units. Thus, incentives need to be designed in order to facilitate private investments in affordable housing. Allowing the developer to build a certain number of market rate units in order to cross-subsidize the affordable units can be one such important incentive. Additional FAR can also be given to developers for undertaking affordable housing projects. Such incentives can be included in the leasehold agreements at the initial stage and thus help to earmark the land/built up area for affordable housing.

Timing of the release of the serviced plots on the market can greatly affect the land alienation outcomes. If all the serviced plots are released at the same time, then the market value of the land can be affected, depending upon what percentage of the total serviced land available constitutes the released plots. If the released land plots are a sizeable portion of the total available land for construction, the prices might have a tendency to go down. Releasing all the serviced land at the same time would also restrict SAIL from benefitting from future increase in land values. The cyclical nature of the real estate markets could also greatly affect the land alienation outcomes.

The amount of a one-time premium charged while alienating public lands can also greatly affect the final price point of the units. Availability of cheap serviced land, especially in urban areas, is one of the major bottlenecks faced by private affordable housing developers. Developers often have to rely on non-banking finance companies and private equity firms to finance land, as Reserve Bank of India prohibits housing finance companies

and banks from financing land (IDFC 2015). The impact on housing prices of high financing costs of land can be negated if the initial premium amounts charged by SAIL are kept at minimum levels. If implemented, this might decrease SAIL's initial revenue-generating capacity, and increase the risk borne by SAIL, as future revenue from the projects can vary greatly depending on several factors including the cyclical nature of real estate and future demand for housing. But keeping down the cost of the initial premiums for leasing land would allow many smaller developers that generally have less financing capacity, to compete with larger developers. As seen in the case of Hong Kong, due to large initial premium generated through public auctions, only a handful of large real estate developers ended up getting the land leases from the government (Hong 2003).

Leasehold structure provides great flexibility to both the public and private entities involved. Anderson (2012, 128) eloquently explains this phenomenon: "In an option value view, leases are seen as maximizing the opportunities for both parties in the lease transaction. The lease mechanism can be viewed as providing a put option for the lessee and a call option for the government. From the government's point of view, in particular, the lease mechanism may be an effective means of hedging risk in the land market."

## CONCLUSION

This paper offers some strategies that should be considered in the design of public leasehold structures in order to achieve the objective of affordable housing delivery in urban areas. This research is particularly relevant currently as in the recent budget (2016) the finance minister has urged the PSUs to divest their land assets to release their asset value as investments for new projects. Based on this, the central government is currently finalizing a policy for creating a land bank of surplus land with PSUs for auctioning (*Business Line* 2016a). Government entities in the past have been reluctant to surrender their landholdings (Peterson and Thawaker 2013), thus public land leasing can be an important mechanism to unlock the economic potential of surplus public land holdings in urban areas, as it allows the respective government entities to retain ownership of the land.

Two analyses were conducted here in order to determine the efficiency of the past and current leasing practices of SAIL in the BSP Township, and

to evaluate the extent of surplus public land available. Based on these two analyses, and a comprehensive literature review and desk research of related topics, recommendations were delineated for the township. A close study of the leasing practices of various cities and countries hints at the constant evolving nature of the leasehold structures in order to adapt to changing contexts. Thus, the strategies recommended above are only an initial step of a larger research agenda of leveraging public land for improving the delivery of affordable housing in India.

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# Financing Urban Redevelopment through the Market?— An Institutionalist Analysis of Shenzhen's Evidence<sup>1</sup>

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## ABSTRACT

*Urban redevelopment's financing gap necessitates market-based investment. Drawing on the case of Shenzhen, China, this field-based research examines the real estate sector's risk-control mechanisms and explains how certain place-specific institutions reduced land procurement transaction costs and hence incentivized the market. Primary interview data reveal that the developer leveraged indigenous culture, negotiation policies and power relations for effective risk management—although deals propelled by mixed formal and informal mechanisms may engender subsequent social risks. The paper therefore recommends reassessing local institutional endowment before tailoring appropriate targets and tools that enable urban policies to utilize real estate markets more effectively and sustainably.*

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1 This research was made possible with generous funding from Harvard Kennedy School's Ash Center for Democratic Governance and Innovation. For research guidance, the author deeply thanks Professor Andrés Rodríguez-Pose, Professor Michael Storper, Professor Ryan Center and Professor Diane E. Davis. Lastly, special thanks for additional advice and support from Jie Sun, Qianqian Zhang, Mei Yang, Yi Yu and Shr-Jie Jian.

## INTRODUCTION

Across the world, rapid urbanizations are accompanied by poverty and inequality (Ravallion et al. 2007), inefficient land use (Brueckner and Lall 2015; Lall 2013), and dysfunctional housing markets (Satterthwaite 2002; Hoek-Smit and Diamond 2003; Okpala et al. 2006). These threats, if not effectively addressed, may impair the economic prospects of cities. As the World Bank suggests, rebuilding existing urban areas, also known as *urban redevelopment*, is a solution to the development challenges faced by cities (Lozano-Gracia et al. 2013). For feasible, sustainable urban redevelopment, a key task is to resolve previous disinvestment and leverage the market to finance redevelopment initiatives (Weiss 2006, 1).

China is currently dealing with the complexity of market-based redevelopment. The country's rapid urbanization has introduced the pressing challenges of city making, although policy and market responses are relatively recent. Currently, the central government is encouraging nationwide public-private partnerships (PPPs) for urban redevelopment, yet local responses are sparse and at best uneven (Liu et al. 2015). It is still unclear how the urban redevelopment policy could utilize market forces more effectively.

Therefore, my research zoomed in on the experience of Shenzhen, a southern Special Economic Zone (SEZ) where developers have largely replaced the government in financing urban redevelopment (Lin and Xia 2016). Specifically, I scrutinized the local real estate firm's behavioral mechanisms regarding finance and development. In order to understand real-world urban PPP intricacies, I collected primary case data and drew on New Institutional Economics to explain *how* certain place-specific arrangements could motivate a firm to share financial risks.

For policymakers trying to fully integrate urban regimes with the real estate market, this up-close, institutionalist analysis might shed some light on the complexity of multisector collaboration. My results suggested that urban PPPs' feasibility not only relates to material assets determined by capital markets and national policies, but that localized social structures, power relations and administrative deployment also matter with regard to *how* economic actors organize themselves and utilize resources. However, in a dynamic view, even though certain bottom-up processes could facilitate investment in a cost-effective way, a redevelopment strategy based on quasi-

formal negotiations might induce some unaccountable behaviors, raise institutional costs yet again and endanger the prospect of development.

This paper first defines urban redevelopment partnerships and institutions. It will then discuss the research methods and focus on empirical findings and analyses. The paper concludes with actionable policy recommendations and suggestions for further research.

## CONCEPTUALIZING URBAN REDEVELOPMENT'S PARTNERSHIPS AND INSTITUTIONS

### **Partnerships and financing**

Financing urban redevelopment is difficult without the market. Rebuilding cities requires large amounts of resources in relatively short periods of time, and across countries, government-led development has been limited by cost and management capacity (Wakely and Riley 2011, xi). This challenge has motivated governments to diversify funding channels and gradually acknowledge market forces, such as via tax relief, fiscal assistance, low-interest loans and rental subsidies (Nie et al. 2015).

China has also been ambitiously pushing the redevelopment of its informal and degraded neighborhoods for more inclusive growth. The national “shantytown transformation initiative” (STI) aims to supply ten million low-income housing units for former shantytown dwellers between 2013 and 2017 (State Council 2013). However, even with China Development Bank’s (CDB) special loan, the STI still faces a financing gap of CNY1,500,000,000,000. Historically, local governmental debt was the main source for filling that gap, but such governmental borrowing, if not controlled, could lead to a severe debt crisis (Nie et al. 2015). Therefore, Yu (2007) and Wang et al. (2008) caution that given the government’s fiscal challenge and urban redevelopment’s social and economic goals, cities across China need to adopt PPPs.

A PPP for the urban STI is an imperative policy option, but its application is limited and unevenly distributed in space. Although China’s central government has explicitly encouraged market firms to participate in the STI (State Council 2015), when firms did participate they were often merely employed as contractors rather than as developers that could manage the entire process and share financial risks. So far, truly market-financed urban

PPPs are concentrated in coastal regions such as Guangdong and Shanghai (Liu et al. 2015).

### **Institutions**

Conventional, economistic views explain the uneven distribution of market-financed urban redevelopment by referring to cities' differential capital and real estate markets (Liu et al. 2015). However, real estate and city making are not merely determined by impersonal supply and demand curves: "markets also work as *social* phenomena" (Logan and Molotch 2007, 1) and successful urban PPPs demand an efficient organizational structure and working mechanism to mobilize human actors, land resources and capital flows (Nie et al. 2015, 34).

Therefore, to understand urban PPPs' empirical variations, researchers need to analyze institutions and human agencies (Logan and Molotch 2007). The World Bank also considers it a critical agenda to research the ties between institutions, land assembly, housing investment and urban transformation (Brueckner and Lall 2015; Lozano-Gracia et al. 2013).

Generally speaking, institutions shape economic development through both formal and informal channels. On the formal side, "institutions are the humanly devised constraints that structure political, economic and social interaction" of a society (North 1991, 97). Renowned economists Ronald Coase (1937; 2000[1960]), Steven N.S. Cheung (1998) and Douglass North (1991) all contend that, as long as the economy involves more than one actor and hence entails transaction costs, institutions matter for the economic outcome. For urban policy, property rights are a key determinant for investment in redevelopment and slum improvement (Field 2005). Specifically, according to Angel (2000, 83), "the establishment of... individual property rights in land and housing is the cornerstone of an enabling housing policy regime."

Besides formal structures, informal institutions such as culture, ideology and interpersonal relationships also matter for development (North 1992; Amin 1999). Specifically, Putnam (1993, 38) emphasizes *social capital*, defined as "features of social organization, such as networks, norms and trust that facilitate co-ordination and cooperation for mutual benefit." Regarding social capital's role in development, Fukuyama (1999) explains its economic function in reducing transaction costs, while Olson (1971) and Ostrom (1990) demonstrate that social trust and collaboration can mitigate

large groups' inherent collective-action problem and improve local governance accountability. In the urban realm, Healey et al. (2002, 21) likewise argue that "governance capacity" and a place's ability to mobilize diverse resources are "embedded in complex local milieus." In all, whether diverse local actors can effectively collaborate on urban issues may also depend on the place's soft social dynamics.

### **The research question**

By applying the institutionalist approach to China's urban transformation, this research problematized the top-down view of the PPP that has traditionally focused on macro fundamentals and national policy agendas. I investigated how urban policy and market feasibility in the real world could be complicated by (1) local property rights politics and (2) informal social mechanisms. These institutional factors might help to explain *how exactly* the policy of urban redevelopment could effectively embrace the real estate market.

Specifically, I raised questions regarding how the local developer perceived risks and how it collaborated with communal and public sectors to manage those risks. Xu (2009, 14) calculates that, for China's urban redevelopment, market firms demonstrate significant and strong sensitivity towards income and risk—the firm's motivation "in cost control and profit pursuit is bigger than the government's." Therefore, in order to reveal feasible urban PPPs' intricacies, this research aimed to explain the project's risk management process.

As any economy is molded by both formal and informal institutions (Amin 1999, 367; Rodriguez-Pose 2013, 1038), this research ultimately addressed how societal and communal relations, or formal and informal institutions, contributed to the economic actors' perception and management of risks. In all, as urban redevelopment hinges upon the interaction between the market, the community and the government, China's experience may shed light on the dynamic, non-linear process of institutional change with broad implications for sustainable investment.

## RESEARCH DESIGN AND METHODOLOGY

In order to answer how institutions motivate market firms to share risks and to understand the interaction between formal rules and informal dynamics,

I conducted a case study in Shenzhen, the pioneering city for urban PPPs in China (Lin and Xia 2016). The case-study approach uncovered the human agency nuances of urban PPPs and provided an up-close and in-depth view of relational, non-statistical aspects of the process (Yin 2014).

### **The case background**

Shenzhen has been struggling with the “urban village,” which is a category of shantytowns in China that is characterized by high density, informal buildings, insufficient infrastructure and an unregulated housing market. My case, Dachong Village, used to be one of those settlements. Before redevelopment, Dachong housed 71,000 people, 2.8% of whom were original villagers while the remaining 97.2% were migrants. The original villagers had lived there from the time when Shenzhen was still an agricultural settlement, and they started building dense properties after Shenzhen urbanized, leasing apartments informally to incoming migrants.

Dachong Village Redevelopment (DVR) broke ground in 2011 and is so far Shenzhen’s largest redevelopment project. DVR demolished 1.03 million square meters of buildings on 69.46 hectares of land and the entire neighborhood was rezoned with new residential towers, offices, hotels and shopping malls. DVR is representative of Shenzhen’s unique redevelopment practice, as most STI projects elsewhere in China are government funded. Shenzhen government politically supported DVR, but it was the developer, China Resources Land Limited (CRLand), that financed the entire CNY30,000,000,000. Currently, Dachong’s original villagers have returned to Dachong after temporary relocation. Other developer-owned commercial buildings are still under construction.

### **Data collection methods**

In order to ensure validity and reliability, I collected data via methodological triangulation. Table 1 lists my data sources, including both in-depth interviews and documents (contracts, government policies, planning files, news, archives and secondary studies). For balanced interview data, I contacted multiple informant groups: besides visiting the four parties directly involved in DVR, I also cross-validated the information with other independent experts.

I conducted the fieldwork in Shenzhen from June to July 2016. Interviewees were selected via purposive and chain sampling techniques.

**Table 1.** Data sources

Category	Organization	# of interviews (total 23)	# of documents (total 38)	Role in DVR if involved
Stakeholder accounts	CRLand	6	3	Developer
	Dachong Village	6	5	Community
	UPDIS	3	2	Planner
	Shenzhen government	1	10	Government
External verifications	CDB	5	2	N/A
	Independent experts	2	7	N/A
	Media	N/A	9	N/A

Snowballing continued until I observed no marginal new information. The final sample included 23 in-depth, semi-structured interviews from six informant groups. A typical interview took 60 minutes and I used informants' native language (Mandarin Chinese) during conversations. Due to the high rank of some informants and the sensitivity of questions asked, interviewees were granted anonymity.

## EMPIRICAL EVIDENCE

This section will explain how the firm perceived risks during redevelopment and demonstrate that local institutions could mitigate risks by facilitating collective action in a low-cost way.

Results show that CRLand managed DVR's financial risks via a series of negotiations. The process was effective because Dachong community's traditional social and governance structure helped reduce both the nominal and the time costs of negotiations. Besides indigenous dynamics, larger power relations mattered too: Shenzhen government's exceptional policy framework and discretionary handling of property rights were the ultimate "risk cutter" for DVR.

### **Risk, cost and concerns for negotiation**

A market firm carries out urban redevelopment for profitability, meaning that costs and risks must be controlled. DVR's potential risk primarily came from Dachong's villagers. The main contention was about compensation, and if villagers eventually refused to sign contracts, all of CRLand's preparatory work would be futile (*Southern Metropolis Daily* 2011).

Therefore, CRLand needed to *negotiate* with Dachong, talking them into agreement so as to ensure the project's feasibility. However, negotiations also came with their own risks. First, opportunity costs would escalate if negotiations, which generated zero positive cash flow, took too long. Second, total expenditure might be too large if the offer were unreasonably generous, even if that package could indeed accelerate the negotiation.

Consequently, in order to minimize both nominal and opportunity costs, CRLand must (1) ensure the villagers' agreement, (2) reduce negotiation time, and (3) claim as much value as possible. A senior director interviewed at CRLand explained: "Whether or not negotiation went smoothly was vital for our cost control. Before construction, DVR was costing us over CNY1,000,000 per day. The faster the negotiation went, the better our situation was."

### **Social structures and consensus building**

Aimed at effective risk management, CRLand's negotiation strategy deliberately internalized Dachong's communal dynamics. Dachong community was traditionally organized via common kinships, strong local leadership, representative democracy and small-group organizations. These characteristics made Dachong a highly autonomous and solidary entity in Shenzhen. Before obtaining the right to construct on Dachong's land, CRLand needed each villager's signature to authorize property demolition. Instead of forming solidary forces against DVR, the village's collective identity and social cohesion actually reduced CRLand's negotiation time through various mechanisms.

Dachong's kinship culture was the first building block for achieving popular consensus. Dachong had a strong communal bond with highly homogeneous demographics. Eighty percent of the original villagers shared three common family names and such kinship culture shaped Dachong's psychological sense of community. A villager interviewee explained: "Because Dachong's people belonged essentially to the same families, we were very close to each other and shared the same way of life." Outsider informants

from CRLand considered the villagers to be “honest and simple” and observed that kinship members tended to keep on good terms with each other and, during DVR’s contract signing, they also acted in the same way.

The strong tradition of trust and kinship culture, however, does not mean that Dachong lacked more organized, complex ways of governance. In 1992, Dachong Corporation (DC) was established as the official governing body of the village economy and the legal entity that owns Dachong’s collective assets. When DC interacted with the villagers, their relationship was characterized by strong leadership, representative democracy and small-group organizational strategies.

First and foremost, Dachong’s strong leadership and representative democracy accelerated collective actions. DC, as Dachong’s highest authority, had very persuasive leaders. According to Shenzhen Design Center’s director of research, who had years of experience in urban villages, DC’s president was like a “parent” whom the “children” must obey. A high-ranking interviewee from DC confirmed: “Villagers were obedient, especially before DVR. When it came to important issues, they listened to our opinions.” Dachong’s decision-making efficiency is further improved as a result of mixing direct and representative democracy. Each villager votes to elect the leaders. Then, when it comes to communal issues, DC represents the villagers in making final decisions. Representatives of shareholders or the board of directors pass proposals by unweighted voting—not every public decision involves all shareholders.

In this way, although it was each villager’s signature that was required for demolition and construction, in practice, CRLand first tackled DC before dealing with individuals. On September 28, 2008, DC’s board of directors signed an agreement with CRLand, approving DVR’s overall plan as well as the preliminary compensation rate. Those decisions were later communicated to other villagers (Cheng 2015, 50). During interview, DC’s leader remembered how the decision worked: “Small meetings first, then big ones. For directors first, then representatives, all shareholders and all villagers—in that order.”

In this regard, DVR’s preconstruction negotiations actually consisted of two phases: Phase I was between CRLand and DC’s management, during which the leaders decided whether to pursue the redevelopment plan and what the compensation rate should be. Phase II’s goal was to let each villager accept the plan. In other words, Phase I determined whether DVR

could happen, while Phase II determined how soon properties and land could be transferred.

DC's strong leadership accelerated both phases of the negotiation. Besides acting as a welcoming gatekeeper in Phase I, DC also actively persuaded villagers to accept the offer in Phase II via communal meetings, propaganda materials and Q&A sessions (Shenzhen Nanshan DVR Authority et al. 2014). CRLand's director considered DC's leaders indispensable for the success of Phase II: "They took charge of working on the villagers' minds, because they know how villagers think and are very persuasive." According to an interviewee from DC, as long as there was mutual understanding and trust between the authority and the community, negotiation should be frictionless.

Besides relying on DC's facilitation, the developer and the government also actively built consensus by tapping into Dachong's finer social structures. The village, despite its size, was tightly organized by DC into six smaller subsidiaries, which brought spatial and social proximity to the large village. According to villagers interviewed, "people in the same subsidiary live close" and "even if you don't know everyone in the village, you will be familiar with people in your own subsidiary." This organizational strategy made collective governance easier: for village-wide issues, the six subsidiaries can just organize smaller-group meetings on behalf of DC.

Following such preexisting subdivision of the Dachong community, during redevelopment negotiations, CRLand and the government also reorganized themselves into six teams, each working with one of the six preexisting subsidiaries. The shortened insider-outsider distance allowed the developer to go deep into the households, talk to villagers face-to-face and befriend the community members. According to CRLand's informants, before directly discussing compensation plans, the developer's employees interacted with the villagers on a daily basis. CRLand's senior director once wrote the following statement: "Only by gaining the villagers' trust will you get support. If you can reach their hearts, the negotiation time could be cut in half....Spend time with them. Drinking teas and having small talks could gain more trust than talking about plans and rates" (Wu 2009). In other words, CRLand knowingly internalized and constructed social cohesions to reduce negotiation costs.

In all, Dachong's social and governing structure contributed to CRLand's risk control by reducing the cost of collective actions during negotiations.

CRLand's senior director explained in the interview: "During urban redevelopment, how you work with people matters the most. After all, urban redevelopment is about human dynamics, interactions and trust."

### **Power relations and property rights transfer**

Besides communal characteristics and informal mechanisms, in fact, DVR's deal could not be completed without the government's formal and informal handling of land-related property rights.

Shenzhen government always had its own interest in DVR, as redevelopment might help to resolve Dachong's historical landownership dispute. The village's building ownership was relatively clear (belonging to either DC or individual households), but regarding land, both DC and the Shenzhen government claimed ownership. Such messiness was due to imperfect policy interventions historically. Overall, China grants no private landownership: urban land is owned by the State, while rural land is collectively owned by rural residents. The municipality could, however, pay the rural residents and convert landownership from collective into State-owned. In 1992, Shenzhen announced plans to nationalize Dachong's rural land, but the government did not pay the conversion fees due to its financial constraints at that time. Consequently, the villagers continued to occupy the land and built denser housing and DC, as the village economy's legal-person representative, held the de facto ownership over Dachong's land. Nevertheless, DC's land rights were not formally registered or officially acknowledged by the equivocal Shenzhen government.

In this regard, the government could use DVR to officially nationalize Dachong's land, because land management law requires landownership to be nationalized before developers can carry out any construction. In other words, after the Dachong community gave collective consent to DVR and before new construction began, a land-registration process had to take place that would convert landownership from "unclear" into formally State-owned.

Nevertheless, landownership nationalization might deter market participation, because in China generally, once landownership is nationalized, the government should transfer the land's construction right via public bidding. Were Dachong's land to be publically bid on, CRLand, after having spent all those years in negotiations, would face the risk of being outbid by others.

Fortunately, Shenzhen's unique policy reduces such risk. Instead of requiring bidding, the government at that time could transfer the urban-village land's construction rights to a designated firm via exclusive negotiations. This policy essentially eliminates the developer's risk of losing the bid after preparations, creating extra market incentives. A senior manager interviewed at CDB considered such permission for negotiation "the key to market participation in redevelopment."

Besides using formal policy frameworks to incentivize the developer, Shenzhen government also helped push DVR via its quasi-legal involvement in the negotiation process. During an interview, DC's leader stated: "After initial preparations, when the government saw that so many villagers had signed contracts and realized that DVR was finally feasible for sure, they made us sign the landownership registration papers and single-handedly gave the land's construction rights to CRLand. We didn't want to accept such a transfer, because in our original agreement, we and CRLand should be DVR's joint-developer—if we were the joint-developer, we could have maximized the village's benefit even more. Otherwise we would not want to forgo our landownership or agree with DVR in the first place. However, the government just took the land and transferred its construction rights to CRLand, without either public bidding or negotiation, but solely at the government's own discretion."

DC's account implies that the government might have been biased when handling the land rights. The negotiation regarding land transfer, from DC's perspective, was skewed towards CRLand's benefit via tacit power dynamics. DC's employee spoke euphemistically: "The government was very powerful and skillful. That's why DVR went so smoothly. The government and CRLand collaborated very well." When asked about land transfer, CBD's senior manager added: "It's possible to see government-firm collusions."

Ultimately, when faced with political power, DC's own interest did not end up postponing the negotiation. Its leader said: "After I said 'no' during some negotiations, the government would let higher-level officials talk to me, working on me, pressing me." An interviewee from Urban Planning and Design Institute in Shenzhen (UPDIS) with extensive experience in urban redevelopment also added: "Although DC wanted joint-development rights as compensation for losing de facto landownership, the government might have suppressed that demand."

In all, Shenzhen government was a key facilitator for DVR's progress—not only did its unique policy framework enable negotiations to happen in the first place, its powerful involvement in the negotiation process also accelerated DVR's landownership formalization and subsequent land transfer. In other words, for CRLand, the government's hard rules and soft influences helped eliminate the developer's final risk before construction—the risk that the exclusive right to construct would be outbid by other developers or shared by the village.

## DISCUSSION AND IMPLICATIONS

DVR suggests that certain place-specific institutions could incentivize the market by jointly inducing the *institutional change* that reduces transaction costs. The case demonstrated the endogeneity between institutional change and economic activities, as the low-cost, low-risk way of clarifying landownership both depended on and enabled the market firm's involvement.

Furthermore, with additional data, I will critique the relationship between power and social cohesion that existed in this case. Counterintuitively, for the purposeful change towards formalization, the place's initially weak legality actually gave room to political power that tacitly influenced the deal. Nevertheless, in a dynamic view, policymakers should understand that although institutionalization encourages market investment, the one-off, non-repetitive nature of land-related profit distribution may shred the very social tissue that facilitated institutionalization in the first place. Such loss of social trust as a result may put future development at risk.

### **Understanding the economics of land-market institutionalization**

Urban policymakers need to be concerned about the cause of and solution to the real estate market's transaction costs. Actually, with the approval of Coase, Cheung (1998) suggests that transaction cost should be renamed *institutional cost* and DVR aptly demonstrates how institutional cost arises and how it can be resolved in non-linear, unconventional ways.

Dachong used to be a forbidding site for investment due to inefficient institutions. Before DVR, the government's imperfect intervention and the village's autonomy led to contested landownership and such unclear property rights made Dachong full of informality and deterred inward

investment. To address such inefficiency, urban redevelopment essentially hinged upon a process of *institutional change* that drove Dachong's landownership towards formal clarification so as to reduce the transaction cost of market-based development.

Nevertheless, DVR suggests that institutional change is not an exogenous process that occurs independently. Redevelopment efforts did not happen *after* landownership was clarified—instead, the process of redevelopment *included* institutional change itself, as it was the real estate sector's involvement (including its interaction with the government and the community) that facilitated landownership formalization. The market, sensitive to transaction costs, acknowledged land transfer as a major source of project risk and actively tried to control that risk by constructing purposeful collective actions. DVR proceeded with low-cost, low-risk institutionalization thanks to the community's culture of social trust, strong leadership, representative democracy and small-group social structure. DVR thus suggests that local governance structure and informal dynamics are indispensable for institutional improvement, because social dynamics can set the motion for pro-development institutional change by mobilizing the actors in an efficient way.

### **Assessing the intertwinement between formal and informal institutions**

Policymakers should also understand the intricacies behind local administrative handlings. The transformation toward strong, formalized landownership institutions was not entirely due to the interaction between the market and the community. In fact, the government, while co-producing institutional change, might take a larger role in affecting the *direction* of change.

On the one hand, Shenzhen's formal policy allowed negotiation-based land transfer, *directly* eliminating the risk of land bidding and incentivizing the market. On the other, during stakeholder negotiations, the government *indirectly* affected the result, as government official's political power influences propelled the final agreement between CRLand and DC. With political power involved, the community's popular consent was purposefully directed towards the developer's attainment of land rights. Here, the government did not formally intervene with law or coercion; its influence was mainly via soft, less visible channels.

After all, during the process of institutional change, communal dynamics can facilitate the happenings of change, but power influences can affect

the direction of transformation. In Buitelaar and Needham's (2007, 119) words, the State can achieve "purposeful institutional change." This closer examination of DVR's negotiation mechanism reveals that while social structures and communal relations could reduce the cost of mobilizing people and resources, power and political momentum could influence where those organized assets are heading.

### **Adopting a dynamic view: the changing prospect of development**

Longitudinally, Dachong's land institutionalization involved a mixture of official and relaxed mechanisms. Policymakers should understand, however, that such a dynamic process could produce varying consequences on different phases of development.

Although Dachong's initially weak landownership institutions did impede market investment, the very weak legality regarding urban-village land at that time actually accelerated the process of institutional change. A planner interviewed at UPDIS explained:

Before Shenzhen formalized the laws of urban redevelopment, many policies had been unclear. Therefore, DVR's specific arrangement was a result of negotiations. Back then, even when there were some relatively clear policy guidelines, the final scheme tended to reside in the grey areas of policies. Right now, it is much slower to deliver urban redevelopment, because the policies are too clear and leave no room for negotiations.

Indeed, institutional change, including those purposefully directed toward formalization, can occur via formal or informal routes (Musole 2009) and DVR suggests that negotiation-based transactions might be more cost-effective than bureaucratic actions. As long as social and political dynamics were jointly deployed, quasi-formal negotiations could accelerate the institutionalization process.

Nevertheless, this bottom-up institutional change, aided partially by the community's strong social trust, could gradually crush social cohesion itself: as the institutional change brings huge profits to stakeholders, the very *one-off, non-repetitive* nature of land-related formalization and transaction could induce unaccountable distribution of profits, shattering the social tissue that had tied together the rural community for generations (Mattingly

2016). After DVR, the community's internal bond waned. "The village's affinity no longer exists," said DC's leader. CRLand's informants also observed: "Faced with such big profit, of course villagers will fight and not agree among themselves." Furthermore, the leaders' legitimacy dwindled too, as DC's informant said that villagers no longer listened to them or came to them for help. Such diminishing communal trust has become a problem for DVR's future. At this moment, villagers cannot agree on the tenant selection scheme for those commercial spaces that CRLand gave back as part of the compensation. Office leasing is equally difficult as villagers and DC often quarrel.

In a way, although DVR delivered fast-paced landownership formalization, future commercial and community development may be risky due to broken social bonds and threatened collective actions. Reflectively speaking, since the formalization process sacrificed the community's informal trust, the overall institutional cost could still be deemed high.

## CONCLUSION AND POLICY RECOMMENDATIONS

Understanding the sociopolitical nature of transaction costs is a key to implementing market-financed urban redevelopment. By analyzing DVR's intricacies, this research revealed some of the institutional origins of transaction costs, the real-world techniques for their mitigation and potential limitations regarding the current cost-reduction approach. Institutions both shape and are shaped by developmental activities and the mechanism behind such relationships can be nonlinear and highly complex. As the case of DVR suggests, on the one hand, strong, formalized property rights are indeed a necessary condition for urban market integration. On the other, however, the road to institutionalization could be paved with a mixture of formal and informal elements, creating varying consequences at different development stages.

For policymakers, this analysis has implications regarding how urban policies could embrace the market more effectively and sustainably. Given the market's cost-sensitive and profit-maximizing nature, urban policies can intervene where sociopolitical dynamics comply with the developer's risk management concerns. Specifically, although it is premature to draw firm conclusions regarding the correlation between sociocultural factors

and investment feasibility, if confirmed by further research, these findings would suggest that the implementation of urban PPP initiatives may be particularly difficult in places with “thin” communal bonds.

My findings also suggest a very active role for local governments. Negotiation-based land transfer incentivizes developers, yet such an arrangement is not China’s default policy. Therefore, cities might need their own frameworks, implying greater devolution of authority. Nonetheless, negotiated land transfer brings less municipal revenue from land bidding, which might turn out to be unfeasible for some cities’ heavily land-based fiscal structures.

Last, as DVR demonstrated, expedient land transaction is prone to moral hazard and unaccountable profit distribution, which necessitates more transparent land market regulations. The regulating mechanism, however, needs to be both impartial—so that all actors can abide by it justly, and flexible—so as to accelerate negotiations and reduce transaction costs.

In all, the traditional, top-down view of designing and implementing urban PPPs across China has under-investigated the real estate sector’s financial and developmental behaviors. By analyzing the interaction between the market, the community and the government in a historical case, with a focus on the real estate sector’s management of transaction costs, this research suggests that policymakers should (1) *understand* how sociopolitical factors contribute to risk allocation, (2) *assess* each place’s institutional endowment, and (3) *tailor* appropriate policy targets, tools and investment for different areas.

It is useful to point out, however, that my findings do not imply that institutions are the most significant determinant of urban PPPs’ feasibility. My scope was to investigate how mixed institutions mobilized people and resources in a low-cost way; it did not aim to trace the availability of material assets themselves. In fact, capital markets, real estate trends and design decisions (such as floor-area-ratio) may also affect projects’ profitability and hence influence market participation. A more detailed analysis, which indexes and regresses both the relational and the material aspects of urban redevelopment, is an important area of future research.

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# Public Housing Investment to Defeat Poverty: Looking into Production and Effectiveness through Quantitative and Qualitative Results

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## ABSTRACT

*This research proposes to look at the double impact of housing policies on poverty through job creation and access to opportunities. These impacts are produced first by the construction activity and then by how location determines access to opportunities among the poor. Using Chile as an exploratory case, the quantitative and qualitative results of social housing policies are analyzed by examining two variables: Public Housing Production Capacity (PHPC) rates and the quality of location for opportunities. After a review of the results, the paper points to possible policy implications.*

## INTRODUCTION

During the period after the 2008–2009 financial crisis, the world witnessed how public spending acquired enormous importance as part of countercyclical economic policies. Investment in housing is one of the most common of these sorts of governmental actions. It tackles both targets of delivering adequate housing and creating jobs through the reactivation of the economy. Such a scenario implies that different types of policy objectives are being pursued together, by means of the same public spending.

On the one hand there are social objectives, guided by criteria defined in institutional spaces such as ministries of social development. On the other hand, there are macroeconomic objectives designed by authorities such as the ministries of finance, treasury or industry. In this paper I propose to use a social-industrial perspective to analyze how these different types of objectives interact with each other in the case of public housing.

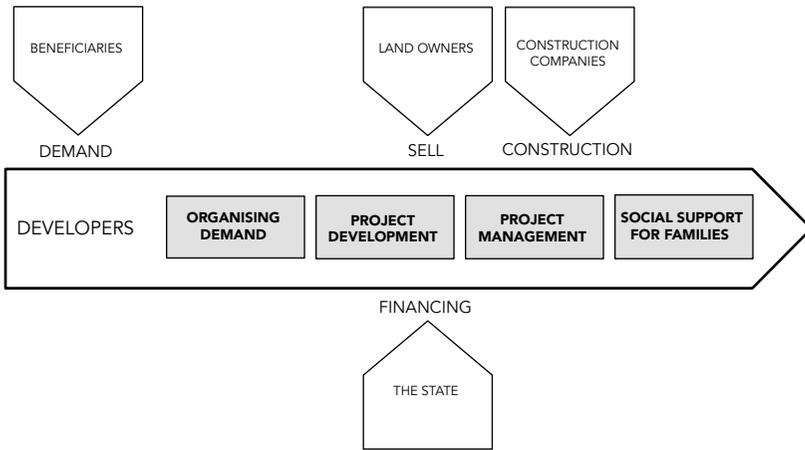
The Chilean case will be reviewed due to the availability of reliable public data and also because it has been used to promote the incorporation of subsidized demand and private supply as the basis for housing policies in developing countries (Gilbert 2002, 2004). The paper is divided into three parts. First, two short sections will introduce a framework to understand the discussion. Second, two longer sections will discuss housing policies' quantitative and qualitative results. Finally, a short section about policy implications will conclude with proposals based on the paper's discussion.

## THE ROLE OF DEVELOPERS IN THE HOUSING PRODUCTION CHAIN

We will pay attention to the specific link of developers in the housing production chain. As discussed by Duncan (1989), housing is produced through a "land conversion chain" in which different actors interact. In the case of public housing, these actors are the state, beneficiaries, landowners, construction companies and developers. As can be seen in Figure 1 for the Chilean model, developers are key for articulating the chain. Their role includes organizing the demand, developing projects, managing their implementation, and providing support to families during the process.

A range of different types of actors can participate as a developer in the chain. They can be classified into three sectors: (1) for-profit, (2) non-profit, and (3) public. In the case of Chile, the for-profit sector is composed of companies of different size. The non-profit sector involves mostly NGOs, usually related to the Catholic Church, and sometimes housing cooperatives. The public sector is mostly represented by municipalities or regional housing agencies (there is a Housing and Urbanization Service in every region). Public housing policies encourage one or more of these types of actors, in their role as developers, to be the main destination of public resources in order to be transformed into housing production.

**Figure 1.** Land conversion chain for the case of Chilean public housing policies



Source: By author based on Duncan (1989).

The strength or weakness of each sector depends on economic, political, social and even cultural contexts. These contexts determine institutions that shape different economies and markets involved in housing production. For instance, in recently formed states that may lack technical capacities, NGOs can be strong partners for developing projects. In contrast, the public sector is the only one available to intervene when conditions of geographical isolation, scale or entry barriers make publicly funded housing markets unattractive to profit-driven companies or inaccessible to NGOs. Cases such as Chile illustrate a common belief in markets and the for-profits, playing the role of developers, as the most capable sector for boosting public housing production. These beliefs will be discussed below.

#### DEVELOPERS, QUANTITY AND QUALITY

Before considering the macroeconomic objectives involved in contexts of countercyclical stimuli, we need to understand that managing housing policies implies organizing an industry. The public housing industry is expected

to produce a desired number and quality of units. One dimension for analyzing and discussing this production is based on the characteristics of the land conversion chain that can be observed thanks to the incorporation of different sectors as developers. Another dimension involves the results of these different chains, both quantitative and qualitative.

In what follows, I will use the Chilean case to illustrate how different forms of organizing the housing production chain—by choosing among sectors as developers—can be understood as the independent variable to observe different quantitative and qualitative results. I will propose forms of measuring these results in order to build a comparable historical and international perspective.

QUANTITATIVE RESULTS: ARE POLICY  
RECOMMENDATIONS BASED ON EVIDENCE?

### **Public Housing Production Capacity (PHPC)**

Various perspectives on housing production usually use different units for measuring and comparing, such as houses and square meters built. However, they tend to use the net annual figures in a way that makes them difficult to compare both in historical and cross-sectional/international perspectives. I propose to use an extremely simple formula:

$$\text{PHPC}_s = \frac{U_s}{L_s} \times 100,000$$

where ‘PHPC<sub>s</sub>’ is the Public Housing Production Capacity rate for a specific geographical and temporal space (‘s’). ‘U<sub>s</sub>’ is housing units built, and ‘L<sub>s</sub>’ is the population living in the specific geographical and temporal space. The multiplication by 100,000 emulates rates used in comparative perspectives in other policy fields, which provide an idea of a certain phenomenon per one hundred thousand inhabitants<sup>1</sup>.

This exercise allows us to compare a state’s capacities in different historical contexts (see Figure 4), or do the same between countries whose sizes

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1 There are examples in fields such as health and crime control. An example from the former could be birth and death rates, while one from the latter could be murder rate.

are as different as Chile and China (see Figure 5). The same could be done within a country, looking at regions or districts, to have a disaggregated view of how housing policies deploy in different local realities. All that is needed is reliable data about production and population. Although the latter is available in reasonable standardized demographical datasets, reports about production vary in format and criteria from country to country. A fundamental basis for moving forward with this kind of exercise is having access to reliable housing production data.

### **Assumptions about the Chilean case and traditional use of data**

The Chilean case has been internationally studied since it is an exception among developing countries. At the beginning of the twenty-first century, Chile achieved having less than one per cent of its population living in slums (see Figure 2). This was the result of aggressive public investment in housing since the 1950s. However, a first common assumption is that the Chilean housing production's boost happened due to structural readjustment and the implementation of policies based on subsidized demand (via vouchers) and for-profit development of projects. This policy orientation was implemented during Augusto Pinochet's dictatorship between 1973 and 1990 (Gilbert 2002) and afterwards was polished by democratically elected governments (Valenzuela-Levi 2016; Farías 2014; Dohnke et al. 2014; Zunino and Hidalgo 2013; Brain et al. 2010; Tironi 2009; Ducci 1997). A second assumption is that these reforms implied that the development of projects shifted entirely from public developers and non-profits before 1973 to for-profits since the dictatorship's reforms and their continuation by democratic governments after 1990 (Valenzuela-Levi 2016; Castillo and Forray 2014; Özler 2012; Dohnke et al. 2012; Brain et al. 2010; Tironi 2009; Gilbert 2004). This second assumption will be discussed further in the following section.

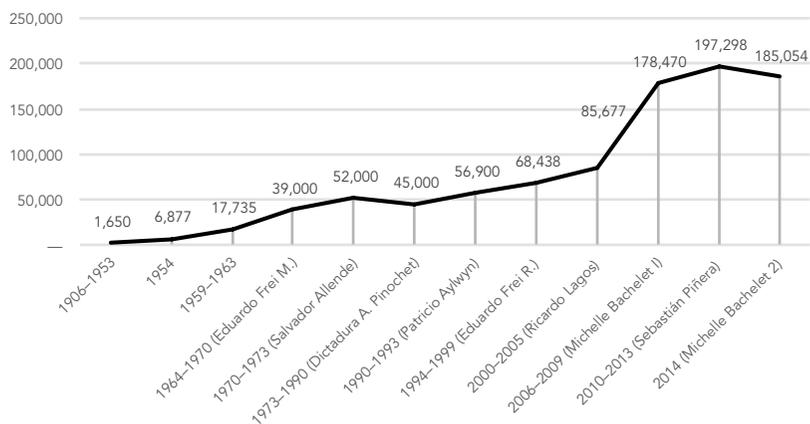
As a consequence of these assumptions, profit is seen as the driver of the boost in public housing production, and Chile is used as an example of how market-oriented housing development is the best option for countries that need to achieve massive production (Gilbert 2002, 2004). But, what does the data say?

Figures showing the average of net units produced per year for different governments (Figure 3) illustrate a continuous increase in production. The logic of using each government's period to make comparisons rests on the fact that housing projects have life cycles that can last between two to four

**Figure 2.** Percentage of population living in urban areas and in slums

Country	Percentage of total population living in urban areas	Percentage of urban population living in slums
Uruguay	95,2	n/d
Argentina	91,6	16,7
Chile	89,4	0,5
Venezuela	88,9	n/d
Brazil	85,4	22,3
Perú	78,3	34,2
Colombia	76,2	13,1
Bolivia	68,1	43,5
Ecuador	63,5	32,6
Paraguay	59,4	n/d

Source: World Bank (2016), UN (2014). Data from Chile calculated from Ministerio de Desarrollo Social (2011) and INE (2015).

**Figure 3.** Chilean average annual public housing production by government


Source: Based on data from Ministerio de Vivienda y Urbanismo (2004, 2016).

years, with production goals set by each government. Despite the fact that some projects may start their cycle in one government and end in another, this grouping can show a better perspective than, for instance, just looking at each year.

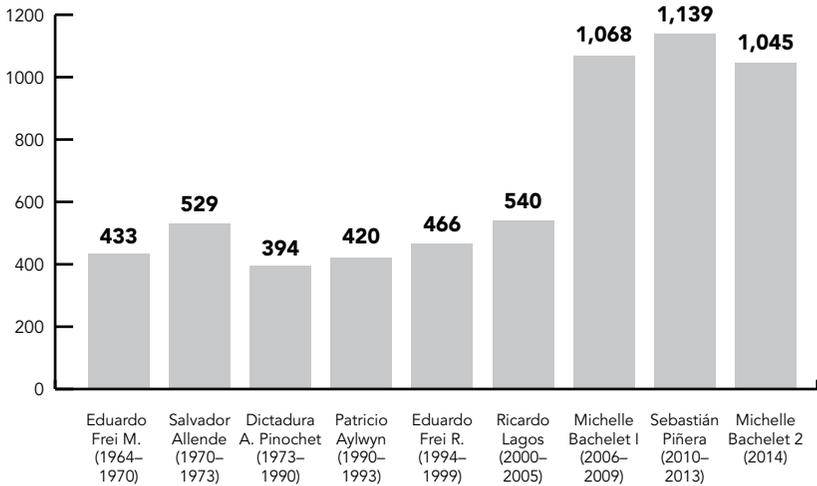
Although the dictatorship is an exception, which implied a decrease in the government's average production and also that increases have different sharpness, the curve shows a permanent rise until 2014. This curve can be used to support the above-mentioned assumptions: although the dictatorship implied a moment for “adjustment”—something natural when structural reforms take place—the years from that moment on witnessed a continuous increase in production. The model consolidated after 2006 and, in recent years, due to the success in covering the housing deficit, production slightly decreased. The story seems coherent. This is the type of story that can be told with the common use of data. What happens when we look into the PHPC?

### **The Chilean PHPC in an historical perspective: questioning common assumptions**

Figure 4 shows the PHPC rate at a national level in Chile, between 1964 and 2014. This period represents half a century of housing policies, in which different forms of organizing project development were in place. The period between 1964 and 1973, during Eduardo Frei and Salvador Allende's governments, represents a moment when the public sector was the main developer of housing projects. The period between 1973 and 2014 implies a shift to market-oriented policies, including the dictatorship and the presidencies of Patricio Aylwyn, Eduardo Frei Jr., Ricardo Lagos, Michelle Bachelet and Sebastián Piñera.

In terms of the PHPC rates, however, although there is a shift in which sector is in charge of projects' development, the 41-year period between 1964 and 2005 exhibits a stable range between 394 and 540. Going into detail, we can see that the dictatorship was not the only moment when the PHPC rate decreased compared to the previous public development period. In fact, PHPC rates stayed lower than the previous period during the first 27 years of market-based housing development—during the dictatorship, and the Aylwyn and Frei Jr. governments. Twenty-seven of the 41 years of market-oriented policies implied lower capacities than the previous public-development period. Lagos' government (2000–2005)

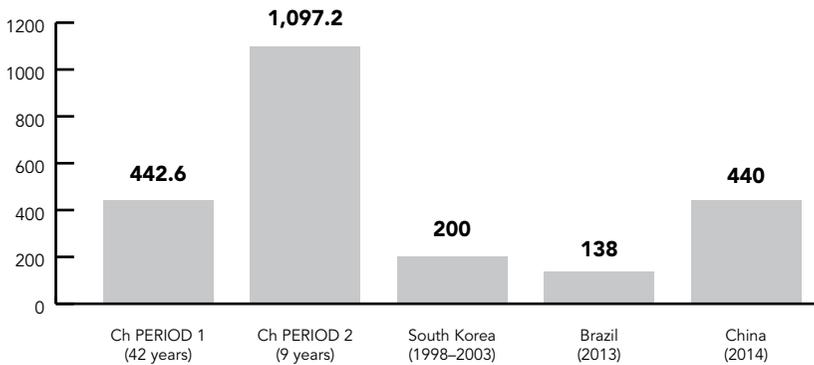
**Figure 4.** Chilean Public Housing Production Capacity by Government (1964–2014)



*Source:* Based on data from Ministerio de Vivienda y Urbanismo (2004, 2016) and INE (2015).

reached production rates only slightly superior to Allende’s (1970–1973). The most dramatic shift occurs during Michelle Bachelet’s first term (2006–2009), during which the PHPC rate doubled. In terms of these capacities, Chilean housing policies during the last half-century can be divided into two periods: one of 42 years between 1964 and 2005, when the average PHPC rate was 442.6; and the other after 2006, when the average rate was 1097.2 (see Figure 5).

Having reviewed these figures, we should question the idea that the change from state-led to market-led development of projects produced a boost in the production of houses. In fact, during the 27 years of market-oriented housing policies, the capacity rate was lower than the previous state-led period. What happened after Michelle Bachelet’s first government is, first, that her economic team decided to use housing subsidies as one of the main countercyclical measures to confront the 2008–2009 crisis. These measures received international praise, since savings from previous years of

**Figure 5.** PHPC from different countries and periods

*Source:* Based on data from countries other than Chile from Yonghui (2014), Selvanayagam (2012) and Magalhaes (2014). Per-capita rates calculated based on population data from the World Bank 2016). Ch PERIOD 1 = Chile between 1964 and 2005. Ch PERIOD 2 = Chile between 2006 and 2014.

balanced public budgets were effectively spent in times of need. International commentators used expressions such as “Chile’s Countercyclical Triumph” (Frankel 2012) and “Chile’s Economy: Stimulating. Cashing in the Fruits of Rigour” (*The Economist* 2009). Andrés Velasco, finance minister at the time, was quoted in *The Economist*:

The challenge is to get the bulldozers moving: “We looked for projects we can do quickly.” Much of the money will go on houses for the poor and road maintenance. He reckons these public works will create 70,000 new jobs directly.

Second, the 8.8 earthquake in 2010 that destroyed around 300,000 houses created a new demand that continued the production levels during Piñera’s government (Valenzuela-Levi 2012a). Finally, years of low economic performance implied the continuation of these stimulus packages. Although they were conceived as an exception, they became permanent, being still in use in 2015 (Banco Santander 2015). It was the macroeconomic policy decision, taken by the Ministry of Finance, which produced

the most notable boost in housing production during the last fifty years. However, the boost cannot be attributed to the market-oriented housing policies, since during the same period other countries, such as China, used public housing investment for the same countercyclical purposes using state-oriented policies (Li'na 2014).

Going back to the “land conversion chain” (Duncan 1989, see Figure 1), the actors that are the target for these kinds of macroeconomic policies are construction companies, since they are the ones that create demand for different sorts of supplies and, especially, they are the ones that create new jobs. The target is neither the developers nor the landowners, although the two tend to be vertically integrated in a market-oriented housing policy since together they can maximize the profit extraction from these state-funded real estate operations. In fact, this profit is what incentivizes them to participate in the chain.

Two important points should be made to close the discussion on quantitative results. First, in a market-oriented housing policy framework, for-profit developers are the intermediaries that make the money arrive in the construction activity, but current experience in the world shows a diversity in which sector is in charge of this strategic link of development. Second, using the PHPC data for Chile, we can question common assumptions about the effects and conveniences of shifting from public and non-profit to for-profit developers. If Chile is being internationally used to promote these kinds of policies (Gilbert 2002, 2004), it is not based on evidence of better results. Therefore, the result will not necessarily be cost effective.

## QUALITATIVE RESULTS: MAKING PUBLIC HOUSING INVESTMENT LAST

### **Is public housing a durable product?**

Turning from quantitative results through the use of the PHPC rate, we will look at qualitative results. If the macroeconomic objectives associated with quantitative results have an impact on poverty through the creation of jobs, qualitative results have to do with how public investment acquires or loses value over time. It is, therefore, a question of sustainability; that is, the durability of the product that is delivered to families. Its valorization over time has impacts on households' life trajectory and, consequently, on the state's finances, since how well or badly it goes will affect future spending

**Figure 6.** Social Housing being demolished in Bajos de Mena, Santiago de Chile, during 2013



Source: Photo by Camila Cociña (2013).

targeted at the poor. If public housing investment helps the poor to get out of poverty, the state will save on future social policies.

But the other side of the coin of Chilean quantitative success is the serious risk of qualitative failure. Since the 2000s an increasing amount of research has warned about the creation of new state-funded ghettos. The fact is that having access to social housing does not necessarily mean having more opportunities to get out of poverty (Rodriguez and Sugranyes 2005). For instance, in 2013 Chile experienced one of the first demolitions of a social housing project in the ghetto of Bajos de Mena (see Figure 6). The government's diagnosis was that the only way to improve the social conditions in this public housing complex was to demolish 1,700 flats, which had been the product of public investment only a decade before. Another example was a new subsidy program, started at the same time as the demolitions, called *segunda oportunidad* (second chance), which consisted of a new voucher for families that had already got one years before but their homes had become part of a ghetto that might be demolished (Ministerio de Vivienda y Urbanismo 2012).

### **Location of houses: the key factor for quality**

Why did all this loss of value in public investment happen? The cause seems to have been the result of the way the land conversion chain (Duncan 1989)

was organized for producing social housing (Sabatini and Wormald 2013). It has usually been assumed that social segregation and expulsion of the poor to the periphery of Chilean cities was a sort of collateral damage of the quantitative success of market-oriented housing policies; this was discussed above (Fariás 2014; Dohnke et al 2014; Zunino & Hidalgo 2013; Brain et al. 2010; Tironi 2009; Ducci 1997).

The problem arises from the way of producing profits through the publicly funded real estate operation. Because a fixed price is set by the subsidy, profits can be created only through the reduction in production costs. The size of units and the quality of construction materials became strongly regulated during the 1990s, and therefore these aspects became practically impossible to be used for saving costs. This led to two key options for producing profits: getting a large amount of land and getting it cheaply in order to reach economies of scale. Although the size of housing projects was formally limited to a maximum of two hundred units in recent years, in order to avoid the concentration and segregation of the poor, developers have managed to bypass the rule by administratively fragmenting projects that are part of bigger complexes (Valenzuela-Levi 2012b).

Land with these characteristics—low price and large size—is only located at the outskirts of cities. This is why the poor are expelled from the center and concentrated in outlying ghettos in almost every Chilean city. In the land conversion chain, developers and landowners integrate vertically in order to maximize profits. The cause of low-quality results is the very reason why for-profit developers participate in the chain. Attempts to improve the location of houses by raising the amount of the subsidy had zero impact on improving access to better quality land; instead it was absorbed by landowners, producing a general rise in land costs (Brain 2010; Brain and Sabatini 2006).

Sabatini and Wormald (2013), who explored the beneficiaries' trajectories after access to housing vouchers, showed that location is the key factor that determines the families' future access to opportunities. One aspect of their research is key to our approach. They reached their conclusions by comparing cases where social housing was built in rich and poor areas of different Chilean cities. The best results were found in high-income municipalities of Santiago, where half of the beneficiaries rose from poverty to middle income, in contrast to less than one-fifth in poorer areas. What their research does not cover is why the same policy produced such different results.

**Figure 7.** Examples of housing prices in two of Santiago's municipalities

Municipality	Average housing prices UF/m <sup>2</sup> (third trimester)		
	Year 2008	Year 2010	Variation 2008–2010
Peñalolén	36.3	38.7	6.65%
El Bosque	23.9	21.9	-8.31%

Source: Valenzuela-Levi (2011).

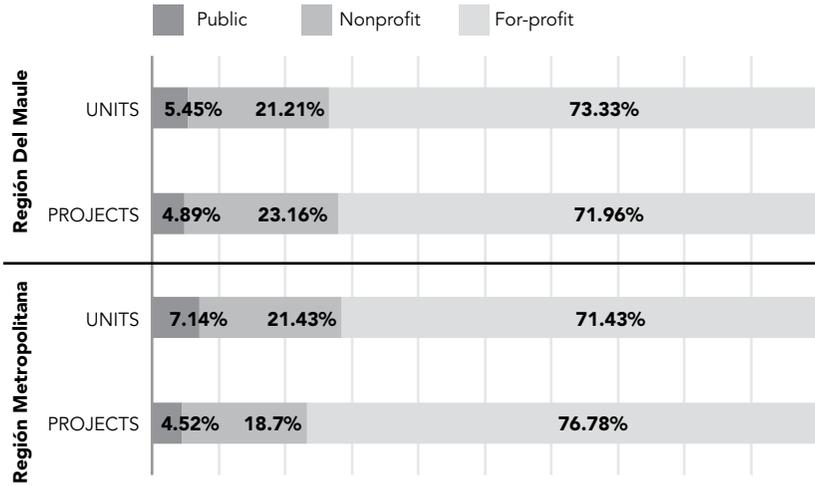
### Different sectors acting as developers in social housing projects

The case with the best result in Sabatini and Wormald's work was located in the municipality of Las Condes—one of the richest areas of Santiago—and it was the local government that acted as developer in the project (Diaz 2008). Reviewing other municipalities in Santiago where social housing is being produced, one can find cases such as Peñalolén and El Bosque (see Figure 7). The move of the average housing prices over time can show how the same public investment in each area can evolve differently. There were periods when social housing was produced under the same policies in the two municipalities, between 2008 and 2010; but in Peñalolén a house acquired value over this period, and in El Bosque it lost value. Surprisingly, while in El Bosque most of the projects were developed by the for-profit sector, in Peñalolén most of them were developed by the local government, just as in Las Condes (Valenzuela-Levi 2012b).

These examples challenge the second common assumption about Chilean housing policies as monolithic private and for-profit production of social housing. Despite a clear shift from state-based to market-oriented public housing production, there are other actors, although relatively few, apart from for-profits ones developing projects (see Figure. 8).

In order to understand this diversity of developers, we will look at all the housing projects produced during 2008 to 2010 in two Chilean regions. The dataset consists of 21,759 units, built in 57 municipalities in two regions (Metropolitana and Maule). After the earthquake, the sharp rise in demand probably altered the previous dynamics, therefore the period was selected to include two years before 2010. Santiago was considered crucial

**Figure 8.** Public housing production by type of developer in two Chilean Regions (2008–2010)



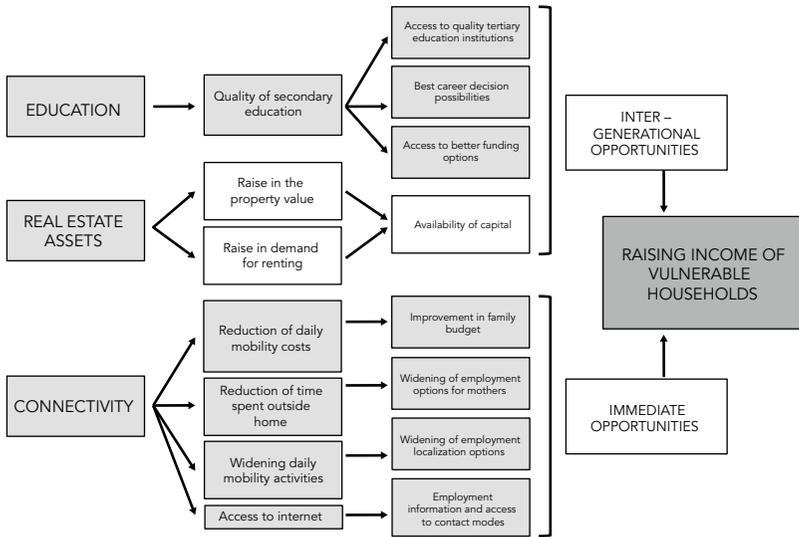
*Source:* The author, on the basis of data requested to the Ministry of Housing and Urbanisation, detailed in Valenzuela-Levi (2012b).

to be studied, since it concentrates two-fifths of the total Chilean population, but another region was added for comparison. As can be seen for each region in Figure 8, the composition of different sectors as developers confirms the idea that, although developers are mostly for-profit, representing 73.65 percent of units built, there is still some presence of public and non-profit actors: 4.76 percent of units came from developers that are municipalities and 21.59 percent were non-profits. This means that there is a mix in the composition of developers, with one-fourth of the units being developed by actors that are not for-profit oriented.

**Measuring quality of location for opportunities**

Access to opportunity depends on objective and subjective conditions that configure a geography of opportunity (Galster and Killen 1995). There are fundamental subjective variables, such as stigma or self-image; but in order to provide the possibility for qualifying locations based on available data

**Figure 9.** Explanation of variables for measuring quality of location

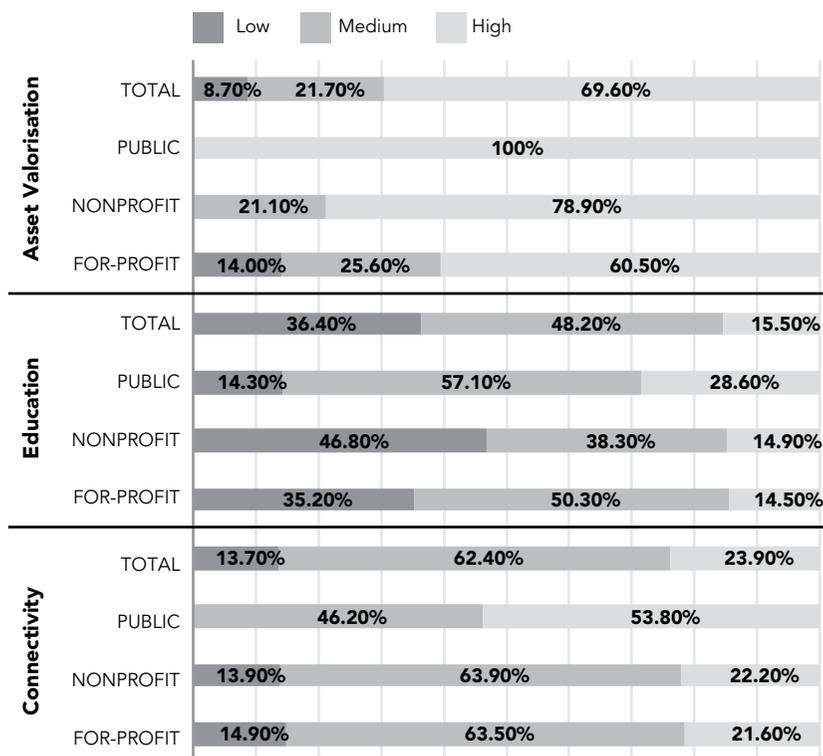


Source: The author.

and also to allow for comparisons, we will focus on the objective opportunity structure. In this case, as explained in Figure 9, I propose to look at three variables that can be associated with immediate and intergenerational opportunities for raising income among low-income households. Three indexes are proposed for measuring three dimensions of quality of locations: access to human capital through education, valorization of housing as an asset, and access to physical and digital connectivity (see Appendix).

Using these indexes we are able to evaluate the quality of locations at a municipal scale in each dimension for the 21,759 units from the dataset, observing how each type of developer—for-profit, non-profit and public—behaved. The values for the indexes were divided into three equivalent high, medium and low ranges. Results (see Figure 10) imply, first, the projects by public developers show a larger proportion of high standard locations in every dimension. Second, for-profit developers produce worse results for all three dimensions. Third, regarding the asset valorisation dimension, projects by public developers were placed only in high standard locations (more discussion about the results can be found in Valenzuela-Levi 2012b).

**Figure 10.** Results from Quality of Location for Opportunity indexes



*Source:* The author, on the basis of data requested to the Ministry of Housing and Urbanisation, detailed in Valenzuela-Levi (2012b).

#### FINAL REMARKS: POLICY IMPLICATIONS

#### **For everyone: considering public housing investment's double impact**

Measuring PHPC rates and quality of location for opportunities is an attempt to look into both the quantitative and qualitative results of housing policies. These results have impacts on two fundamental phenomena for poverty: the creation of jobs and access to opportunities. We have tried to do two things. First, to show the double impact that public housing investment

has: job creation through the activation of the construction sector, and access to jobs and income resulting from the location of houses and the opportunity structure. These two impacts tend to be a concern of different institutions within governments, which lack coordination between them. In the case of Chile, quantitative industrial goals, originating from the Ministry of Finance, seem to dominate over qualitative social goals.

Second, having sufficient evidence allows us to look at how different actors play a role in the production of social housing, and to have a cost-effective approach while paying attention to specific contexts. There are no magic solutions, but evidence-based decisions and policies need reliable data, analysis, and accountable decision-making. For instance, the historical perspective on the PHPC rates for the Chilean case makes us question the idea that only the for-profit sector as developer can produce a massive supply of social housing. In addition, we see different incentives and capacities when analyzing how for-profit, non-profit and public developers have impacts on the quality of location for opportunities.

All the actors involved in housing policies should consider the double impact of this public investment on jobs creation and access to opportunities. Sustainable policies imply integrating a comprehensive understanding of and control over these two usually uncoordinated types of objectives. The housing policies' effects on poverty depend on this double impact, and lack of coordination can make success in one dimension have irreversible collateral damage in the other. Most developing countries cannot afford to waste resources by having to invest twice in the same problem.

### **For states: social-industrial policies**

The discussion about different sectors as developers and their qualitative and quantitative results leads to understanding that there are trade-offs that depend on specific contexts, and that comprehensive strategies are needed to tackle both social and industrial objectives. There is a need for social-industrial policies. From the social point of view, quality of location for opportunities is key for long term cost effectiveness. From the industrial point of view, states need to understand how the production chain is organized, and how strategic is the role of developers. In the recent Chilean situation, there seems to be a trade-off between quality and quantity: for-profits produce high quantities but at a poor quality, and public developers achieve promising qualitative results, but they provide the minority of total supply.

At the same time, since 2006, the non-profit sector alone exhibits PHPC rates that are equivalent to the entire industry in cases such as Korea or Brazil (see Figure 6).

Just as Chang (2009) has called for reintroducing the “production” side into the big picture of the discussion about development, the production side of housing policies needs to be included when thinking of social goals, such as the reduction of poverty and inequality. As Chang (2005) has extensively discussed for the case of productivity, manufacturing and economic growth, housing also needs the presence of strategic state action. Industrial policies need to mold markets according to openly defined and accountable social goals, in which the double impact on jobs and income must be central.

Pragmatic context-specific, evidence-based and cost-effective solutions might occur by using the role of developers in a strategic way. In some cases, the state acting as developer and taking advantage of scale economies could incorporate market competition through public bids, in which costs are lowered and social objectives are achieved. This doesn't mean to question the participation of the private for-profit sector in other links of the chain, but, as Duncan (1989) discusses, how to structure this chain might lead to non-productive extraction of profits through land reconversion, or to productive profits due to competitiveness, productivity in the construction process and the rise of the final product's quality. Other cases might prove different sectors in the role of developers as the best option. However, in order to make informed decisions, we need access to data, which leads us to the final point.

### **For the UN: Promotion of a global common standard for data**

All the previous discussion depends on availability of adequate data. One of the main advantages of the Chilean case is the availability of this data, but these figures cannot be easily built for all countries. In an attempt to provide an exploratory comparison of PHPC rates, I was able to find a very diverse quality of data and reliability of sources (see Figure 5). The UN could play a role in implementing international standards for data, including the different variables that we have been discussing at national and local levels. In addition, incorporating quality as a problem urges the existence of objective reliable measurements at a sub-city level, as can be the case of municipalities, districts or boroughs. Considering the success that the

UN and other multilateral organizations have had in other fields, producing comparable data could allow us to advance our knowledge and action on public housing investment's multiple impacts on poverty.

APPENDIX. QUALITY OF LOCALIZATION INDEXES

$$\text{Education} = \left( \frac{\text{AE} \left( \frac{\text{Specific Value} - \text{Min. Value}}{\text{Max. Value} - \text{Min. Value}} \right) + \text{PE} \left( \frac{\text{Specific Value} - \text{Min. Value}}{\text{Max. Value} - \text{Min. Value}} \right) + \text{PP} \left( \frac{- \text{Specific Value}}{\text{Max. Value}} \right)}{3} \right)$$

AE = Mean years of schooling; PE = Percentage of graduated students from public schools that scored more than 450 points (minimum access score) in the University Selection Test (PSU); PP = Average in basic scores in the University Selection Test among graduated students from public schools

$$\text{Asset Valourisation} = \left( \frac{\text{VV} \left( \frac{\text{Specific Value} - \text{Min. Value}}{\text{Max. Value} - \text{Min. Value}} \right) + \text{PV} \left( \frac{\text{Specific Value} - \text{Min. Value}}{\text{Max. Value} - \text{Min. Value}} \right)}{2} \right)$$

VV = Average value of the square meter; PV = Variation in average value of the square meter for the period 2008–2011

$$\text{Connectivity} = \left( \frac{\text{PI} \left( \frac{\text{Specific Value} - \text{Min. Value}}{\text{Max. Value} - \text{Min. Value}} \right) + \text{TM} \left( \frac{\text{Specific Value} - \text{Min. Value}}{\text{Max. Value} - \text{Min. Value}} \right) + \text{DH} \left( \frac{- \text{Specific Value}}{\text{Max. Value}} \right)}{3} \right)$$

PI = Percentage of households with access to internet; TM = rate of motorization; DH = Distance to main Hospital

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