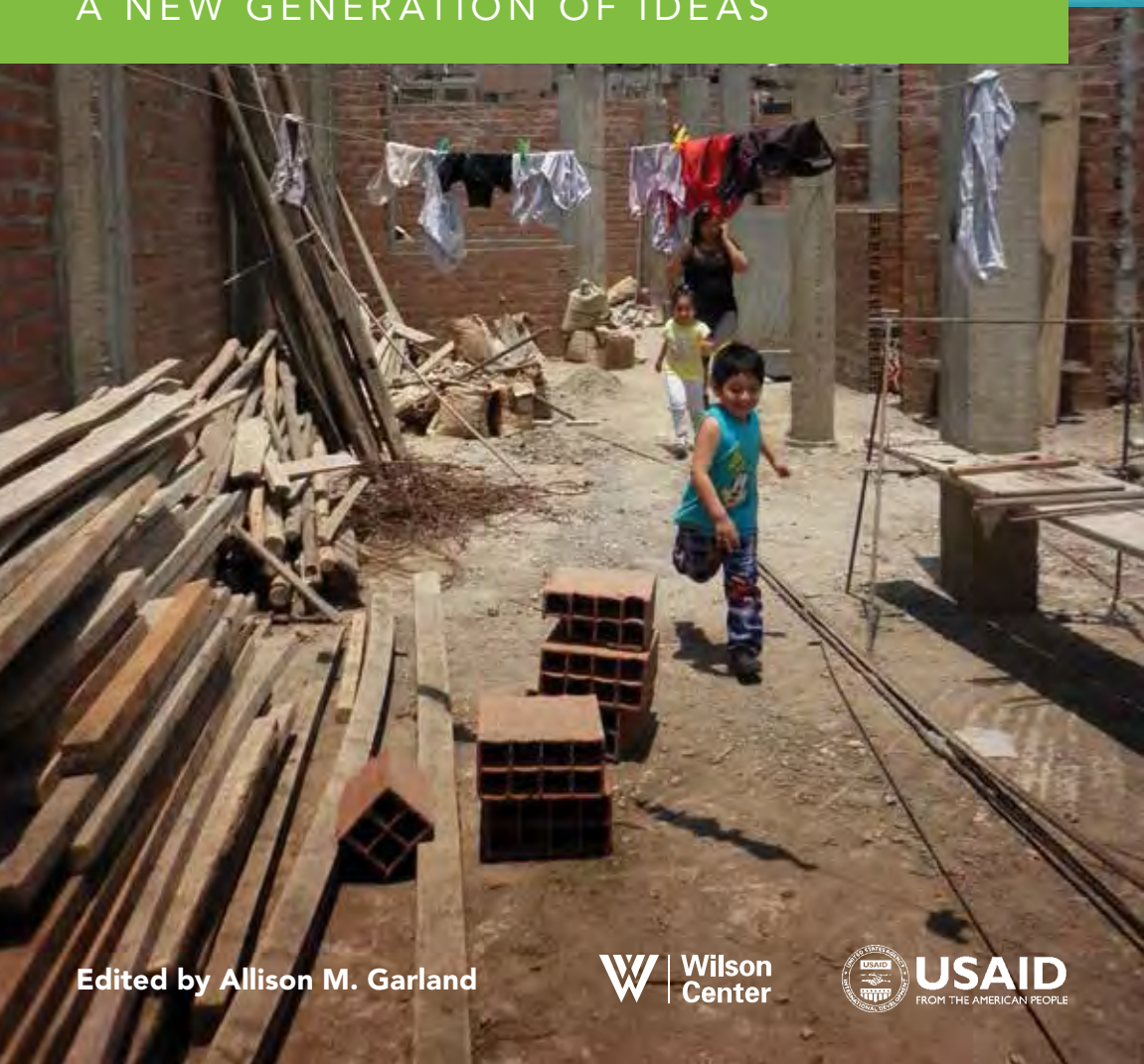


URBAN OPPORTUNITIES:

Perspectives on Climate Change,
Resilience, Inclusion, and
the Informal Economy

A NEW GENERATION OF IDEAS



Edited by Allison M. Garland

 Wilson
Center

 **USAID**
FROM THE AMERICAN PEOPLE

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Urban Sustainability Laboratory
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Cover Photo: Vertical growth for future generations in "los aires,"
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Introduction

URBAN OPPORTUNITIES

Urbanization is one of the most significant megatrends shaping the world in the 21st century. An estimated 180,000 people are moving into cities each day (USAID 2013) and by 2050, it is expected that 66% of the world's population will be living in urban areas (UN DESA 2014). With the recognition that sustainable and equitable cities are a crucial component of a livable future, policymakers must pursue the transformative potential of urbanization.

Sixty percent of the area expected to be urban in the next 15 years is not yet built (SCBD 2012), offering tremendous opportunity to shape the urban landscape with innovative solutions and a greater understanding of urban life. Two major processes currently underway present an important opening for international cooperation and national action to integrate urban approaches into the global development agenda. First, as the United Nations system defines a set of Sustainable Development Goals (SDGs) to follow the Millennium Development Goals and frame the post-2015 development agenda, support is growing for an urban goal to “make cities and human settlements inclusive, safe, resilient and sustainable” (UN OWG 2014). Second, the United Nations is preparing to convene Habitat III in 2016. The objective of this UN global summit, which occurs every 20 years, is to secure renewed political commitment to sustainable urbanization and to implement a “New Urban Agenda” that positions cities as drivers of sustainable development.

Urbanization must be framed as an opportunity to address the world's most pressing problems, which are perceptibly playing out in cities--poverty, exclusion, vulnerability, and environmental degradation. At the same time cities are engines for growth and innovation; accounting for 70% of the world's wealth, urban areas offer tremendous promise for economic development, job creation, and prosperity.

URBAN KNOWLEDGE

Urban research and expertise are the foundations upon which decisions about urban policies and priorities will be made to develop and build consensus around the “New Urban Agenda.” Similarly, data and evidence-based knowledge on urban development are critical for defining targets and indicators that could be used to measure and monitor the progress toward an urban SDG. The processes feeding into the formulation of global strategies must be inclusive, involving a wide range of stakeholders and perspectives. The input of voices often excluded from global and local decision making, such as the urban poor, women, and youth, to identify needs and priorities, and to determine the future of the cities where they live is vital to the success of a “New Urban Agenda.”

A NEW GENERATION OF IDEAS

To encourage a new generation of urban scholars, practitioners, and policymakers, and to disseminate their innovative ideas, the Wilson Center’s Urban Sustainability Laboratory, together with Cities Alliance, the International Housing Coalition, USAID, and the World Bank, sponsors an annual paper competition for advanced graduate students working on issues related to urban poverty. The competition is designed to promote the early career development of young urban researchers as well as to strengthen ties between urban policymaking and academia.

This publication marks the fifth year of the “Reducing Urban Poverty” competition and includes a range of perspectives on urban challenges and policy solutions. The 2014 competition called for papers linked to one of the following subtopics: cities and climate change; urban resiliency; inclusive cities; and the impacts of the informal economy. Each chapter in this volume critically examines existing urban policies and projects, offering original, solutions-oriented research and strategies.

To select the winning papers for publication, a panel of urban experts representing each of the sponsoring institutions reviewed 146 abstract submissions, from which 23 were invited to write a full length paper. Of these, eight papers were selected for this publication.

CHAPTER SUMMARIES

Cities and Climate Change

Cities are at the forefront of addressing the challenges of climate change. Urban areas account for 70-80% of greenhouse gas (GHG) emissions and will play a key role in global mitigation efforts. At the same time cities, especially in coastal areas, are facing increased exposure to hazards and risk. Forced to adapt to the realities of climate change, many urban areas are on the cutting edge of innovation through interventions in sectors such as urban planning and design, transportation, and storm water management.

In the first chapter of this volume, author Eric Chu offers a comparative analysis of climate change adaptation in the Indian cities of Bhubaneswar, Indore, and Surat. Chu examines how external incentives and mandates get translated into climate adaptation planning and implementation at the local level. He considers approaches to mainstreaming adaptation into urban development, examining stakeholder engagement and trade-offs to draw conclusions about the political and governance dimension of how cities frame and implement interventions that balance adaptation with urban development priorities.

Alisa Zomer also considers the influence of external processes and priorities on urban climate adaptation, drawing conclusions about the governance implications for adaptation decision making and policy implementation at the local level. Looking at the case of Metro Manila, Zomer argues that urban climate adaptation efforts are fragmented due to lack of coordination and sovereignty barriers. She concludes with a series of recommendations for advancing urban adaption planning and identifies future research topics to enhance urban climate knowledge.

Urban Resiliency

Recent urban disasters, such as the 2010 earthquake in Port-au-Prince, Haiti, or the typhoon that hit the coastal city of Tacloban in the Philippines, expose the unique challenges and opportunities of responding to natural and man-made disasters that occur in cities. Response and recovery from the destruction of housing, basic services, and public infrastructure is particularly challenging in urban settings, as is planning for disaster risk reduction.

In Chapter 3, Clifford Amoako explores the factors that influence vulnerability and resilience to flood hazards in two informal settlements located

along the banks of Korle Lagoon near the Central Business District (CBD) of Accra, Ghana. Amoako's work reveals that growth processes, land ownership structure, security of tenure, and state government institutions have played important roles in the exposure and vulnerability to perennial flood events in Accra. He calls for a reconsideration of the current structure and process of urban governance, state-community engagement, urban citizenship, and right to the city in these communities.

Ivette Arroyo examines how families affected by Typhoon Haiyan have been involved in housing reconstruction efforts in the Philippines. Arroyo offers a framework for reconstruction policy that builds back better by offering individuals the freedom to plan and design their housing, decide collectively, to self-build with technical assistance, and evaluate in real time. This "freedom to rebuild" approach enhances people's capabilities and leads to more resilient communities.

Inclusive Cities

With rapid global urbanization, cities are becoming spaces where increasingly diverse populations negotiate differences in race, class, ethnicity, nationality and gender. Inclusive pluralism is an essential aspect of sustainable urban development. The papers in this section of the volume assess policies intended to help marginalized populations more fully access urban economic activity and city space.

Signe Sørensen examines the capacity of the informal sector to absorb unemployed urban youth through self-employment in the informal micro-enterprise (IME) sector. Using Ghana as a case study, Sørensen finds that external constraints, such as financial and infrastructural concerns as well as increased competition and market saturation, limit the expansion of the IME sector. Moreover, the lack of formal education and relevant work experience are significant barriers to youth self-employment. Based on these findings, a more comprehensive approach to tackling the absorption capacity of the IME sector will need to address both macro- and microlevel constraints.

In Chapter 6, Olga Peek explores self-help as a housing strategy for low-income settlements in Lima, Peru. Through case studies conducted in the neighborhood of Pampas de San Juan, she examines the process of home consolidation over several decades across three generations of inhabitants to conclude that the self-help housing model has reached its social and spatial limit in Lima.

Impacts of the Informal Economy

While the economic power of cities is well documented, the impact of the informal economy in urban areas must be better understood. Informal settlements are full of entrepreneurial residents who earn livelihoods by providing urban service delivery such as water and transportation. Cities can take advantage of this potential by supporting local economic development, promoting the use of innovative technologies, and encouraging urban productivity.

In chapter 7, Oyebanke Oyelaran-Oyeyinka presents a case study of the Otigba information and communications technology cluster in Lagos, Nigeria to assess the impact of industrial clustering on the living standards of informal sector workers. While informal sector workers face different types and intensities of vulnerabilities, clustering raises their living standards compared to non-cluster based firms. Oyelaran-Oyeyinka also finds that informal institutions based on social and kinship ties fill the gap left in the absence of formal social protection institutions by providing employment and benefits that help improve the well-being of workers.

Through a pilot study in Livingston, Zambia, Laura Frederick examines the opportunities that mobile payment systems can offer microenterprises that face limited access to capital for growth and information technology for enhanced productivity. Frederick finds a substantive increase in net marginal profits for urban micro-entrepreneurs who use mobile money, suggesting that mobile money services have the power to transform the informal sector through greater financial and economic inclusion of micro-entrepreneurs.

REFERENCES

- Secretariat of the Convention on Biological Diversity (SCBD). 2012. *Cities and Biodiversity Outlook*. Montreal: SCBD.
- UN Department of Economic and Social Affairs (UN DESA), Population Division. 2014. *World Urbanization Prospects: The 2014 Revision, Highlights* (ST/ESA/SER.A/352). New York: United Nations.
- UN OWG. 2014. *Open Working Group Proposal for Sustainable Development Goals*. New York: United Nations.
- USAID. 2013. *Sustainable Service Delivery in an Increasingly Urbanized World*. USAID Policy. Washington, DC: USAID.

Urban Development and Climate Adaptation: Implications for Policymaking and Governance in Indian Cities

Eric Chu

*Department of Urban Studies and Planning, Massachusetts
Institute of Technology*

ABSTRACT

In recent years, numerous international actors have stepped in to support climate change adaptation efforts in developing country cities. These external interventions provide guidelines and strategies for incentivizing local responses to climate impacts, but their implications for on-the-ground implementation and overall urban governance are unclear. Through a critical comparative analysis of climate adaptation policymaking and planning in the Indian cities of Bhubaneswar, Indore, and Surat, this paper unpacks the various approaches to mainstreaming adaptation into urban development, interrogates the different ways to engage local actors, and identifies mismatches between designing external policy interventions and implementing grounded adaptation projects and programs.

INTRODUCTION

Cities in developing countries are beginning to recognize the importance of adaptation because of their disproportionate exposure to climate impacts and lower capacity to respond. At the same time, an increasing number of international policymakers and funders are advocating toolkits that

integrate and support both climate adaptation and development objectives, arguing that combining these two objectives will help ensure the long-term resilience of cities. As a condition of financial support, these external interventions frequently emphasize which urban sectors are to be considered during adaptation planning, what sorts of participatory approaches are to be pursued, and how projects and programs are to be prioritized based on particular evaluative indicators. What is less documented, however, is how these external incentives and planning prescriptions get translated into new or existing urban programs for supporting local livelihoods, improving public infrastructure and services, and promoting economic development.

In response to these gaps in research and practice, this paper investigates the cities of Bhubaneswar, Indore, and Surat in India to understand how urban local governments plan, implement, and advocate for locally grounded, contextually relevant adaptation priorities given the existence of external mandates and incentives. Through unpacking the implications of these emerging incentives, this paper argues that adaptation planning, as well as how adaptation is integrated into urban development planning, occurs through processes of prioritizing adaptation against development needs and implementing options that are cocreated amongst concerned public and civil society actors. In terms of its relevance to urban policy and planning, this paper informs cities, both within and outside of India, about the variety of approaches to mainstreaming adaptation into urban development, highlights the policy trade-offs associated with different adaptation planning and implementation pathways, sheds light on the most suitable ways to engage civil society actors, and identifies the institutional mismatches between designing external policy interventions and implementing local adaptation projects and programs.

THEORIES OF URBAN CLIMATE ADAPTATION POLICYMAKING AND GOVERNANCE

Climate adaptation is the process of adjusting to actual or expected climate impacts (IPCC 2014). Although mitigation continues to dominate the international discourse on climate change, adaptation is gradually gaining policy importance. Given that many developing countries have contributed minimal greenhouse gas emissions, but have and will feel the severest

climate impacts, adaptation has become closely linked with the development agenda (Ayers and Dodman 2010). The cost of climate proofing development investments in developing countries is estimated to be between US\$9 and \$109 billion per year (World Bank 2010), so discussions around the practical opportunities for integrating initiatives that support development while also reducing climate vulnerabilities have come to the fore in international negotiations.

Climatic stresses on natural and social systems are global in origin but adaptive responses are often found at the local or national levels, so the process of adaptation necessarily entails the conjoining of actors and stakeholders across all these different scales. The decentralization of climate adaptation policymaking and governance is accompanied by the expansion of non-state actors participating in this arena, such as various nongovernmental and civil society organizations, philanthropic foundations, aid agencies, and different partnership networks (Bulkeley and Betsill 2013). The diversity of actors is a major determinant of the legitimacy and sustainability of adaptation processes, while multiple nodes of governance are necessary to maintain system flexibility and diversity (Finan and Nelson 2009). Although the legitimacy and effectiveness of adaptation depends heavily on local institutional capacity, many scholars have also noted that the presence of global agreements or protocols (Revi et al. 2014), strong legal and regulatory frameworks (Kehew et al. 2013), and finance and capacity transfer mechanisms are strong enabling factors that incentivize local implementation (Klein 2010; Ciple, Roberts, and Khan 2013; Smith et al. 2011; Gomez-Echeverri 2013; Streck 2010).

For developing country cities, adaptation and development are closely related. The literature notes that mainstreaming adaptation into development planning and implementation can contribute to the livelihoods of people and make improvements in their capacity to deal with changes in climate (Halsnæs and Trærup 2009; Huq and Reid 2004; Mertz et al. 2009; Puppim de Oliveira 2013). For example, adaptation policies and plans often seek to generate co-benefits with sectoral health initiatives (Ebi and Semenza 2008; Lesnikowski et al. 2013; Edwards et al. 2011), natural disaster management (Pelling and Dill 2009; Mercer 2010), socio-economic development (Mertz et al. 2009; Huq and Reid 2004; Halsnæs and Trærup 2009), or spatial development agendas (Carmin, Anguelovski, and Roberts 2012; Uittenbroek, Janssen-Jansen, and Runhaar 2012). All

of these approaches seek to improve the social and climate resilience of the urban system as a whole (Tyler and Moench 2012; da Silva, Kernaghan, and Luque 2012).

Local governments are often most attuned and responsive to climate risks, vulnerabilities, and impacts (Carmin, Anguelovski, and Roberts 2012; Hunt and Watkiss 2010). Many cities often oversee primary responsibility for managing infrastructure and social services that are essential for promoting good living standards, inclusiveness, and the reduction of vulnerability to many environmental hazards (Dodman and Satterthwaite 2009). Cities that are “early adaptors” seem to be motivated by internal incentives, ideas, and knowledge generated through local projects and networks, and the means to link adaptation to ongoing programs and enlist the support of diverse stakeholders from within the city (Carmin, Dodman, and Chu 2013).

“Early adaptor” cities tend to formalize adaptation planning early on, such as in the form of line departments or laws and legislations, in order to strengthen legitimacy and facilitate implementation and coordination across sectors and departments (Anguelovski and Carmin 2011). Cities in developing countries have historically experienced strict resource limitations when planning and operationalizing adaptation strategies (Dodman and Satterthwaite 2009); to bypass these constraints, cities have pursued numerous experimental and creative strategies for assessing adaptation needs and prioritizing and implementing options (Anguelovski, Chu, and Carmin 2014; Carmin, Dodman, and Chu 2013). For example, cities have pursued different vulnerability and hazard assessments (Patt et al. 2009; Fussel 2007), devised local geographic information system-based climate projections and scenarios (Berkhout et al. 2013; Ebi et al. 2014), developed economic models and similar decision-support tools (Nay et al. 2014), and relied on inclusive and participatory planning approaches to highlight social justice and equity priorities (Hughes 2013; Sherman and Ford 2014; Susskind 2010). As one can see, urban climate adaptation is fundamentally a governance challenge given the diversity of strategies, approaches, and actors interacting in this arena (Friend et al. 2014; Termeer, Dewulf, and Breeman 2013).

Table 1. Key city climate and development indicators

City/Indicator	Bhubaneswar	Indore	Surat
State	Odisha (Orissa)	Madhya Pradesh	Gujarat
Urban Population (2011)	880,000	2,200,000	4,500,000
Key Climate Impacts	Heatwaves, increasing cyclones, flooding, precipitation change	Water scarcity, drought, river flooding, vector-borne diseases	Flooding, vector-borne diseases, public health and sanitation, sea-level rise
Key Development Pressures	Rapid urbanization, migration, housing, infrastructure	Rapid urbanization, migration, water supply infrastructure	Rapid urbanization, migration, infrastructure pressures
Key Industries	Information technology, telecommunications, tourism, retail and hospitality	Automotives, light engineering, household food production, pharmaceuticals	Textiles, diamond, heavy engineering, petrochemicals, real estate
Key City Institutions	Bhubaneswar Municipal Corporation, Odisha State Disaster Management Authority	Indore Municipal Corporation, Indore Development Authority	Surat Municipal Corporation, Southern Gujarat Chamber of Commerce and Industry
Key External Actors	United Nations Development Programme, US Agency for International Development, ICLEI-Local Governments for Sustainability	Asian Cities Climate Change Resilience Network, UK Department for International Development, TARU-Leading Edge	Asian Cities Climate Change Resilience Network, TARU-Leading Edge
Key Urban Climate Plans/Policies	Bhubaneswar Climate Resilience Strategy (2013)	Indore City Resilience Strategy for Changing Climate Scenarios (2012)	Surat Climate Resilience Strategy (2011)

METHODOLOGY

This paper explores how urban governments in India plan, implement, and advocate for locally grounded, contextually relevant adaptation and development priorities given the existence of external mandates and incentives. To do this, the paper presents a comparative place-based case study method encompassing document analysis and key informant interviews conducted in the cities of Bhubaneswar (Odisha), Indore (Madhya Pradesh), and Surat (Gujarat) between January 2011 and June 2014. Data sources include interviews with experts on the city's adaptation planning process, observations of planning meetings, and analyses of municipal plans and different reports on project implementation, monitoring, and evaluation.

The cities of Surat, Indore, and Bhubaneswar were selected because they have long histories of engagement with and have received support from external programs, including the Rockefeller Foundation's Asian Cities Climate Change Resilience Network (ACCCRN) and the Climate Risk Management technical assistance project through the United Nations Development Program (UNDP) and the United States Agency for International Development (USAID) (see Table 1 for additional descriptive indicators). Furthermore, these cities have actively articulated and advocated for their own development needs while working with these actors.

COMPARATIVE ASSESSMENT OF URBAN ADAPTATION EXPERIENCES

Key climate priorities in India include rising temperatures (Mathison et al. 2013), increasingly erratic rainfall and monsoon patterns (Menon et al. 2013; Chhotray and Few 2012), increasing flooding risks (Chatterjee 2010; Mathew, Trück, and Henderson-Sellers 2012), and rising sea levels (Revi 2008). In Indian cities, climate-induced vulnerabilities are likely to further reduce the resilience of poor and vulnerable communities (Srinivasan 2012; Sharma and Tomar 2010), such as through loss of livelihoods and loss of community social safety nets, with asymmetric impacts based on gender, age, caste, and class (Mukhopadhyay and Revi 2012; Ahmed and Fajber 2009; Archer et al. 2014).

In 2008, the Government of India released the National Action Plan on Climate Change, which outlined explicit goals for mitigating climate

change and addressing key climate vulnerabilities at the national, state, and local levels (Government of India 2008; Dubash et al. 2013). Urban climate adaptation planning is a new phenomenon in India, where many cities are just beginning to think about managing climate vulnerabilities and devising planning methodologies to address adaptation and development (Castán Broto and Bulkeley 2013; Rodima-Taylor, Olwig, and Chhetri 2012). These emerging climate adaptation policy and planning experiments allow stakeholders to flexibly frame adaptation objectives, implement resilient development pilot projects, and monitor and evaluate project outcomes (Cárdenas 2009; Wise et al. 2014). Experiments, such as those described in this paper, are critical practical and analytical tools because they allow local governments and urban actors to test decision-making pathways (Rondinelli 1983), to help prioritize climate adaptation options, and to evaluate overall project benefits in the face of uncertain climate futures and highly decentralized governance arrangements (Anguelovski, Chu, and Carmin 2014; Castán Broto and Bulkeley 2013).

Mainstreaming Adaptation into Disaster Risk Management in Bhubaneswar

Bhubaneswar is situated on the Mahanadi Delta in the eastern coastal plains of Odisha. The city is both the administrative and economic capital of Odisha and, with a population of 880,000, is also one of fastest growing in the country. The city is managed and administered by the Bhubaneswar Municipal Corporation. Prior to economic liberalization in the early 1990s, Bhubaneswar's economy was dominated by small-scale industries, most of which involved the processing and trading of natural resources extracted from interior Odisha. Since then, Bhubaneswar's economy has expanded significantly and the city has become a service, tourism, and information technology hub (Bhubaneswar Development Authority 2012).

According to official figures, there are 377 slums in Bhubaneswar, which account for approximately 50% of the population. The city has been affected by many major climatic hazards in the past, including heat waves, cyclones, and floods (Bhubaneswar Municipal Corporation 2003; Chittibabu et al. 2004). For example, in October 1999, Bhubaneswar experienced a "super cyclone" with winds of nearly 300 kilometers an hour that also inundated the city with torrential rainfall (Thomalla and Schmuck 2004). The cyclone caused more than ten thousand deaths across Odisha; damaged more than

two million hectares of agricultural land; halted basic services such as water, sewage, and solid waste collection in Bhubaneswar; and resulted in more than US\$5 billion in damages along the Odisha coast (Chhotray and Few 2012; Mishra and Mishra 2010). This prompted the immediate creation of the Odisha State Disaster Mitigation Authority (OSDMA), the publishing of the *Environmental Management Plan of Bhubaneswar* (Bhubaneswar Municipal Corporation 2003) in 2003, and eventually the *Odisha Climate Change Action Plan* (Government of Odisha 2010) in 2010.

Between 2005 and 2012, the Bhubaneswar Municipal Corporation was part of the United Nations Development Programme's Urban Risk Reduction project, which worked to reduce disaster vulnerabilities across the local government. In 2012, the Bhubaneswar Municipal Corporation, in partnership with ICLEI—Local Governments for Sustainability, initiated the city's vulnerability and risk assessment and adaptation planning process. The assessment highlighted issues of precipitation change, temperature change, and extreme events as key climate impacts. Major risks to the urban system include ensuring adequate water supply, maintaining housing and energy infrastructures, and protecting ecosystems. Since 2013, Bhubaneswar has been a pilot city for the Climate Risk Management project supported by United Nations Development Programme and the United States Agency for International Development. The project aims to promote the city's overall resilience through focusing on institutionalizing programs, building community-level awareness, and policy-level changes.

Throughout Bhubaneswar's engagement with these different external actors, the focus has always been on disaster risk reduction and community engagement and awareness. So, in addition to facilitating cross-departmental coordination within local government and identifying nodal champions, these recent projects have also focused on implementing school safety programs, community disaster response workshops, and, most importantly, facilitating community-based hazard risk and vulnerability assessments. These assessments then catalyzed ward-level disaster management plans, incentivized the creation of a volunteer civil defense corps, and initiated various community workshops to help generate awareness of search and rescue procedures, debris management, and other training programs.

For Bhubaneswar, the overall urban development agenda has framed adaptation and climate resilience in terms of immediate capacities for responding to and managing the impacts of extreme events, rather than dedicating

significant investments towards addressing slow-onset climate impacts. For example, when Cyclone Phailin struck the coast of Odisha in October 2013, government authorities were able to evacuate more than ten thousand people from slums across the city within hours of notice. Moreover, due to extensive response training programs, there were no casualties in Bhubaneswar that were directly attributable to Cyclone Phailin, compared to the thousands who perished during the 1999 “super cyclone.” There were clear directives for each city department for both disaster preparation and for restoring services to roads, buildings, public health, and water supply systems immediately afterwards. From the 198 disaster response centers spread across the city, the Bhubaneswar Municipal Corporation was able to reinstate water supply through public and private tankers and restore electricity supply to critical services and residential areas within three days.

Adaptive water management and infrastructure upgrading in Indore

Indore is the largest city and the commercial capital of Madhya Pradesh. The city, which is managed by the Indore Municipal Corporation, lies at the confluence of the Rivers Saraswati and Khan, though both are non-perennial rivers that experience low to no flow during the dry winter months. Indore has a population of approximately 2.2 million and has experienced nearly 50% population growth and approximately 6.5% annual economic growth for the past decade (Indore Municipal Corporation 2006; Agarwal et al. 2008; Gupta et al. 2006). Many of the city’s 540 slum settlements are located along creeks and, thus, are prone to flooding, waterlogging, and vector-borne diseases (*Indore City Resilience Strategy* 2012). Rapid urbanization has also accelerated the loss of green space and has contributed to pollution of water bodies, high rates of solid waste generation, and general inadequacy of urban public services (Gupta et al. 2006).

Water accessibility and distribution are Indore’s most critical environmental stressors (Dipak and Arti 2011). Currently, portions of the city’s water are supplied through groundwater, which has declined by up to four meters in parts of the city (Gupta et al. 2006), existing rainwater collection tanks, and the Yashwant Sagar Dam located to the south of the city. The bulk of Indore’s water (nearly 80%) comes from the Narmada River, which is located 70 kilometers away and is 550 meters lower in elevation compared to the city (UN-Habitat 2006). Although climate projections

have showed that the quantity of water supply from the Narmada River will not be an issue in the near term, transportation will become more expensive as operational and maintenance costs for the entire pipeline system gradually increase. Under the Narmada Water Supply Scheme, Narmada water is supplied to Indore only for several hours every other day (Indore Municipal Corporation 2006). Furthermore, 90% of water connections in Indore are unmetered, and are being assessed only flat charges according to the number of connections rather than according to the quantity of water consumed. Even with these minimal fees, the collection rate is only 70%. Various assessments indicate that the demand for water in the city is increasing at the rate of nearly 5% per year (Gupta et al. 2006).

With support from the Rockefeller Foundation's Asian Cities Climate Change Resilience Network (ACCCRN), adaptation planning in Indore began in 2009, which culminated in the release of the *Indore City Resilience Strategy* in 2012. This document identified water, public health, and human settlements as most vulnerable to climate change and, therefore, catalyzed pilot projects around experimenting with new water harvesting and conservation technologies and devising new decentralized wastewater management and treatment models.

For example, in one urban slum settlement, Rahul Gandhi Nagar, a reverse osmosis plant was built with direct financial support from ACCCRN and indirect institutional support, through permits and subsidies, from the Indore Municipal Corporation. The reverse osmosis plant was inaugurated in March 2013 and has a capacity to treat 7,000 liters of groundwater and gray-water per day. The financial replacement rate for the plant is to sell 250 twenty-liter bottles per day, at 5 rupees (approximately US\$0.08) each. The profits would then be funneled back for cleaning and maintaining the plant. In another slum, Nawal Kankab, ACCCRN partners built and disseminated water storage tanks. Because the primary source of potable water for this community is located far from the village itself, these tanks, costing 500 rupees (approximately US\$8) each, provide additional household water storage capacity. Lastly, a community water-harvesting program was launched in the third site, Ganeshnagar, which involved designing a community-wide system of collecting and storing rainwater; purifying this water through drum filters consisting of coal, sand, and brick fragments; and, finally, collecting water through common-access outflow taps.

These projects facilitated a renewed local focus on water conservation and protection as critical urban development priorities and have catalyzed some institutional change in the local government itself. In particular, the Indore Municipal Corporation recently banned the drilling of new bore wells within the city limits. Also, since 2006, the Municipal Corporation has mandated that water harvesting be integrated into the development of master plans for new commercial buildings and home construction. Currently, in addition to subsidies that cover initial purchase and installation costs, private residences that install rainwater-harvesting technologies receive a 6% rebate on their annual property tax bill.

Urban public health and climate resilience in Surat

Surat, in the western state of Gujarat, has an urban population of more than 4.5 million and is bureaucratically managed by the Surat Municipal Corporation. Since the 1960s, Surat has experienced about 80% decadal population growth, which makes it one of the fastest growing cities in the world. Much of this urban growth can be attributed to migrants in search of jobs in Surat's well-developed textile, diamond, and petrochemical industries. In the most recent census, around 55% of the population lived across 400 slums scattered across the city, mainly along riverbanks and tidal creeks (ACCCRN 2011).

Surat is a coastal city and is vulnerable to sea level rise, river flooding, and urban heat. Notably, in 1994, Surat experienced a plague epidemic that led to one of India's first large-scale urban sanitation and public health programs. In 2006, unusually high rainfall produced high discharges from Ukai Dam, which is situated upstream from Surat on the Tapi River. During this episode, 75% of the city's built-up area was flooded, leading to an explosion of gastrointestinal and vector-borne diseases especially within low-income and slum neighborhoods. Due to the experience of these major disasters, Surat's climate adaptation initiative is heavily focused on addressing public health, flooding, water supply, and resilient economic development needs (ACCCRN 2011; Bhat et al. 2013).

Surat, like Indore, has been a part of Asian Cities Climate Change Resilience Network (ACCCRN) since 2008. Between 2009 and 2010, ACCCRN partners assisted the city in designing pilot projects and drafting a city resilience strategy. This methodology placed particular attention on stakeholder engagement and vulnerability assessment processes to

identify indicators for potential short- and medium-term adaptation interventions (Kernaghan and da Silva 2014; Brown, Dayal, and Rumbaitis Del Rio 2012; Karanth and Archer 2014). Between 2010 and 2011, one of these recommended projects, the Urban Services Monitoring System, was piloted across the city. This project established a robust electronic platform to improve the city's urban health monitoring system, particularly around incidences of malaria, dengue fever, and leptospirosis. The system included designing a mobile application for health data collection, a web-based mapping and data visualization tool, and an electronic server to store and manage data. This system resulted in the real-time collection, visualization, and analysis of urban health data, which has further assisted different Municipal Corporation departments with predicting disease outbreak and enabling swift response.

Soon after the *Surat City Resilience Strategy* (ACCCRN 2011) was published in late 2010, the various stakeholders decided to form the Surat Climate Change Trust to institutionalize the process that ACCCRN had initiated. Located outside of formal local government decision making, the trust is a platform upon which different actors can contribute to prioritizing adaptation options, soliciting external financial support, and defining the city's overall resilient development agenda. One of the initial projects pursued by the trust is the Urban Health and Climate Resilience Center, which, like the Urban Services Monitoring System, targeted the nexus of public health and climate resilience. In order to meet the increased demands brought on by climate change, the Urban Health and Climate Resilience Center was designed to build on the knowledge and operating procedures of the city's existing public health facilities. This center would then go on to provide auxiliary support to state and national level urban health professionals while also incorporating climate resilience issues across all levels of decision making. Since the center was launched in 2013, the facility has worked to install an improved vector-borne disease surveillance system, has hired an interdisciplinary research team to steer and advise the city's actions towards managing the existing public health system in light of climate change, and has inaugurated a city-wide outreach program that promotes preventative health practices.

Finally, many urban actors beyond the Surat Climate Change Trust are recognizing the importance of climate resilience as a key component of the city's overall socioeconomic wellbeing. In early 2013, the Surat Municipal

Corporation adopted the issue of climate change as one of the line items included in its annual municipal budget. The line item earmarked 20 million rupees (approximately US\$300,000) per year to complement and build upon existing urban infrastructure upgrading and service enhancement efforts. These include programs around slum relocation and rehabilitation, road and public transportation infrastructure improvement, flood and storm water control, water distribution system improvement, and wastewater management.

IMPLICATIONS FOR URBAN ADAPTATION POLICY AND GOVERNANCE

As the case studies show, there are a number of planning methodologies and implementation approaches that Indian cities have pursued in order to further climate adaptation and resilient urban development objectives. The remainder of the paper is devoted to a critical comparative analysis of these various approaches. A summary of these patterns is presented in Table 2.

Enabling Climate Adaptation in Cities

The projects and experiments described in this paper all note that the ability of cities to implement climate adaptation requires innovative planning and decision-making methodologies that take into account local socioeconomic and environmental conditions, even when transnational and intergovernmental actors are involved in the initial and enabling stages. For the Indian context, in particular, the local agenda has been disproportionately focused on industrialization and economic development, where sustainability and climate protection has come to mean safeguarding and increasing the resilience of economic systems and associated infrastructures (Atteridge et al. 2012; Fisher 2012), rather than on equitable development, poverty reduction, and social justice and human rights.

This dichotomy can be clearly seen in the “early adapter” cities of Bhubaneswar, Indore, and Surat. In Bhubaneswar, the majority of projects focused on disaster risk reduction, urban risk management, and natural hazard mitigation. This is a sensible strategy given the city’s historic vulnerability to extreme weather events, including cyclones and urban heat. Projects framed around improving climate resilience, therefore, are motivated by an overall interest in protecting infrastructure and physical investments against damages from extreme weather and providing response and

Table 2. Summary of Patterns of Climate Adaptation Planning and Implementation

	Bhubaneswar	Indore	Surat
Initial Framing			
Motivations	Disaster risk reduction, urban risk management, and natural hazard mitigation.	Ensure access and availability of water resources and upgrading urban infrastructures.	Improve public health, reduce the city's risk profile, and protect urban infrastructures.
Co-Benefits	Protection of infrastructure and physical investments against weather damage. Response and rehabilitation services after extreme events.	Water supply protection and development for urban consumption. Solid waste and sewage management improvements.	Public health research and investments in urban socioeconomic data management and visualization techniques.
Implementation Pathway			
Strategy	Integrating urban adaptation objectives into city and community disaster risk management plans.	Relying mostly on community-level water management and conservation programs.	Institutionalizing adaptation projects into formal public-private decision-making and fundraising bodies.
Participation	Community-based strategies involving community members, service delivery professionals, and external agents.	Community support, local government incentives, and planners and engineers with knowledge of the local water infrastructure.	Constant engagement from international actors and capacity and resource support from local and regional research institutions
Barriers	Project-focus only catalyzed incremental changes to disaster and climate planning. Also, there is an over-reliance on external financial and capacity support.	Difficulty in sustaining local government leadership and the inability to coordinate cross-jurisdictional water planning.	Focused on promoting sector-specific adaption. Lack of broadly inclusive planning processes to promote social equity and justice.

rehabilitation services after particular disaster events. In Indore, the developmental challenge has always been safeguarding water resources and upgrading urban infrastructures. Climate adaptation and resilience, therefore, came to mean ensuring water supplies for urban consumption and improving existing solid waste and sewage management systems. Lastly, for Surat, the main motivator for adaptation was the need to improve public health, reduce the city's overall risk profile, and protect urban infrastructures in the event of flooding or drought. This, then, led to projects around improving public health research and targeting investments at associating data management, geospatial mapping, and visualization techniques.

In Bhubaneswar, Indore, and Surat, development objectives around economic resilience and infrastructure protection have overshadowed livelihoods security, poverty reduction, and social justice agendas. This reflects local governments' interest in articulating adaptation options that yield tangible and visible local benefits. As a result, the overriding motivations found in these three cities are the ability to further immediate growth-oriented development projects, facilitate private and public-private capital investment, address existing urban infrastructure and service deficits, and, in the meantime, to creatively reframe emerging adaptation priorities initiated by external support programs. The trade-offs here, therefore, are not necessarily between climate and development agendas, but between near-term economic benefits and long-term equitable development objectives.

Implementation pathways, institutions, and governance

The cases of urban adaptation also point to the variety of institutional and participatory pathways through which projects and experiments are eventually implemented. The diversity of actors involved in planning not only brings particular institutional and socioeconomic interests to the fore, but it also legitimizes the process by ensuring procedural justice (Moser and Ekstrom 2011; Paavola and Adger 2006). Although many local stakeholders lack access to specific climate projections and, therefore, may not be able to make adequately informed decisions around potential adaptation options (Few, Brown, and Tompkins 2007; Carmin and Dodman 2013), local actors are often cognizant of livelihoods, infrastructural, and economic development needs.

One common enabling factor across the three cities is the presence of an international actor, particularly in the form of the Rockefeller Foundation's

Asian Cities Climate Change Resilience Network and the United Nations Development Programme (Sharma and Tomar 2010). Through increased public exposure and awareness provided by these actors and networks, cities are increasingly realizing that actions towards mitigating climate risks and adapting to climate impacts cannot be addressed independently of interrelating economic development and livelihoods security priorities. Local governments are indeed profiting from the support provided by these external actors, especially since cities tend to be financially constrained in general. But since external interventions are not enough to ensure the sustainability of climate adaptation projects across time or to enact broad-ranging programmatic change within local government itself, Bhubaneswar, Indore, and Surat have all enlisted support from local civil society and private actors to further legitimize and facilitate the implementation of adaptation experiments.

For Bhubaneswar, adaptation experiments relied on community-based strategies that involved concerned urban slum dwellers, service delivery professionals, and additional support from external agents. The success of the many disaster management projects relied on the ability of these actors to raise awareness of impacts across slum settlements and schools. In Indore, water conservation and management projects relied on a combination of community support, local government incentives, and planners and engineers with knowledge of the local water infrastructure. Finally, in Surat, public health experiments succeeded because of constant engagement from international actors and capacity and resource support from research institutions. In all three cities, the local government played a pivotal role in providing an institutional home for emerging climate adaptation priorities, but the different strategies for implementing these experiments relied on extensive networks of public, private, and civil society actors whose constant engagement with each other revealed opportunities for integrating climate and development objectives. Since experiments tend to be time-bound and location specific, the experimental approach helps control costs, ensures effective and accountable implementation, and helps monitor and evaluate specific project benefits.

These interactive and iterative engagement processes between different urban actors and institutions have incentivized policy and planning framings around maximizing complementarities based on a city's overall developmental agenda, such as disaster management in Bhubaneswar, water availability and protection in Indore, and improvement of public health in

Surat. These examples show that in order to achieve such common framings that produce synergistic projects, there exists a discursive process of uncovering and framing co-benefits between climate resilience and urban socioeconomic development priorities. This discursive process often includes assembling expert advisory committees, task forces, and other consultative groups that mostly exist outside of local government decision making and, as highlighted in the case studies themselves, is driven strongly by private and civil society interventions.

Barriers to institutionalization

Finally, the cases described in this paper have shown that experiments are critical for testing ideas, quantifying co-benefits, and navigating through different participatory governance arrangements. Still, there is little evidence to show that these projects and experiments are being institutionalized into overall urban planning and management to affect sustained programmatic change. For example, disaster management projects in Bhubaneswar have only catalyzed incremental changes in how the city plans for extreme events across all sectors and communities. Similarly, public health interventions in Surat have only resulted in sector-specific climate adaptive behaviors, rather than showcasing cross-sectoral adaptation pathways. As a result, without institutionalization, adaptive capacities will be built only within discrete sectors, actors, and locations, rather than towards improving climate resilience throughout the urban socioeconomic system as a whole.

There are also different institutional barriers that need to be overcome if climate adaptation experiments are to be institutionalized into wider urban development planning approaches. First, even with additional financial support from external agents, local governments find it challenging to sustain adaptation experiments over time, particularly because cities often also lack knowledge, expertise, and staffing capacity (Carmin, Dodman, and Chu 2013). For Bhubaneswar, Indore, and Surat, seed money for projects was pieced together by creatively navigating external and intergovernmental sources, but these cities will likely assume future maintenance and upkeep costs alone. This daunting cost trajectory has incentivized local governments to select low-cost, co-beneficial projects that integrate sustainability, climate, and development objectives. However, in cities with high governance capacity and fiscal autonomy, such as the case of Surat, larger capital-intensive adaptation projects, including hard flood management

infrastructures, have been built. These were done because industries critical to the long-term development of the city were located in some of the most vulnerable areas.

Second, and most important, despite the general success of most adaptation experiments, issues of equity and social justice have not been adequately addressed. Even though local governments have solicited public and private participation throughout the planning process, this has mostly been limited to expert stakeholders. Moreover, while focusing specifically on ensuring the city's overall infrastructure resilience and developmental sustainability, many projects have neglected to tackle issues of poverty reduction and livelihoods security. For example, focusing only on public health interventions in Surat, though critical for the overall resilience of the city, may result in the diversion of local government attention away from other critical adaptation needs such as addressing chronic poverty among the migrant community and improving delivery of water, electricity, and sanitation services to slum settlements. These indirect institutional costs threaten the long-term trajectory of experimentation and prevent proper institutionalization of adaptation projects into overall urban planning, decision making, and governance processes.

CONCLUSION

Through critically assessing climate adaptation experiences in the cities of Bhubaneswar, Indore, and Surat, this paper contributes to understanding the political and governance dimensions of how cities frame and implement interventions that balance adaptation and resilient development objectives. Experiments are critical to this process because they provide a platform upon which cities can test out adaptation options against their existing development priorities, knowledge of climate impacts, and levels of external support (Castán Broto and Bulkeley 2013; Anguelovski, Chu, and Carmin 2014). Through discursively articulating adaptation options against different urban institutional and sectoral interests, cities are able to synchronize and contextualize tangible near-term adaptation benefits with immediate economic development needs.

This paper also notes that a project-oriented approach to adaptation that negates the need for wider institutionalization cannot yield sustained

engagement around furthering climate resilience and urban development objectives. Adaptation does not entail development as usual, but instead speaks to the need to incorporate long-term climate concerns into current planning. So, in terms of its wider policy contribution, this paper argues that external agents should approach urban adaptation and urban development as mutually reinforcing objectives, rather than dedicating adaptation funds that are operationally distinct from “traditional” development assistance. Finally, in terms of the ability to implement effective, legitimate, and inclusive climate adaptation experiments, external actors and local governments alike must design more collaborative and participatory approaches that incorporate climate adaptation and the development needs of the most environmentally and socioeconomically vulnerable sectors of society.

REFERENCES

- ACCCRN. 2011. *Surat City Resilience Strategy*. Surat, India: Asian Cities Climate Change Resilience Network (ACCCRN) and TARU-Leading Edge.
- Agarwal, S., A. Satyavada, P. Patra, and R. Kumar. 2008. “Strengthening Functional Community–Provider Linkages: Lessons from the Indore Urban Health Programme.” *Global Public Health* 3 (3): 308–25. doi:10.1080/17441690701592957.
- Ahmed, Sara, and Elizabeth Fajber. 2009. “Engendering Adaptation to Climate Variability in Gujarat, India.” *Gender & Development* 17 (1): 33–50.
- Angelovski, Isabelle, and JoAnn Carmin. 2011. “Something Borrowed, Everything New: Innovation and Institutionalization in Urban Climate Governance.” *Current Opinion in Environmental Sustainability* 3:1–7. doi:10.1016/j.cosust.2010.12.017.
- Angelovski, Isabelle, Eric Chu, and JoAnn Carmin. 2014. “Variations in Approaches to Urban Climate Adaptation: Experiences and Experimentation from the Global South.” *Global Environmental Change* 27:156–67. doi:10.1016/j.gloenvcha.2014.05.010.
- Archer, Diane, Florencia Almansí, Michael DiGregorio, Debra Roberts, Divya Sharma, and Denia Syam. 2014. “Moving towards Inclusive Urban Adaptation: Approaches to Integrating Community-Based Adaptation to Climate Change at City and National Scale.” *Climate and Development* 6 (4): 345–356. doi:10.1080/17565529.2014.918868.
- Atteridge, Aaron, Manish Kumar Shrivastava, Neha Pahuja, and Himani Upadhyay. 2012. “Climate Policy in India: What Shapes International, National and State Policy?” *Ambio* 41 Suppl 1 (January): 68–77. doi:10.1007/s13280-011-0242-5.
- Ayers, Jessica, and David Dodman. 2010. “Climate Change Adaptation and Development I: The State of the Debate.” *Progress in Development Studies* 10 (2): 161–68. doi:10.1177/146499340901000205.
- Berkhout, Frans, Bart Hurk, Janette Bessembinder, Joop Boer, Bram Bregman, and Michiel Drunen. 2013. “Framing Climate Uncertainty: Socio-Economic and Climate Scenarios in

- Vulnerability and Adaptation Assessments.” *Regional Environmental Change* (August 28). doi:10.1007/s10113-013-0519-2.
- Bhat, G. K., Anup Karanth, Lalit Dashora, and Umamaheshwaran Rajasekar. 2013. “Addressing Flooding in the City of Surat beyond Its Boundaries.” *Environment and Urbanization* 25 (2): 429–41. doi:10.1177/0956247813495002.
- Bhubaneswar Development Authority. 2012. *Annual Report 2012*. Vol. 42. Bhubaneswar, India: Bhubaneswar Development Authority. doi:10.1111/epp.2606.
- Bhubaneswar Municipal Corporation. 2003. *Environmental Management Plan of Bhubaneswar*. Bhubaneswar, India: Bhubaneswar Municipal Corporation.
- Brown, Anna, Ashvin Dayal, and Cristina Rumbaitis Del Rio. 2012. “From Practice to Theory: Emerging Lessons from Asia for Building Urban Climate Change Resilience.” *Environment and Urbanization* 24 (2): 531–56. doi:10.1177/0956247812456490.
- Bulkeley, Harriet, and Michele M. Betsill. 2013. “Revisiting the Urban Politics of Climate Change.” *Environmental Politics* 22 (1): 136–54. doi:10.1080/09644016.2013.755797.
- Cárdenas, Juan Camilo. 2009. “Experiments in Environment and Development.” *Annual Review of Resource Economics* 1 (1): 157–82. doi:10.1146/annurev.resource.050708.144056.
- Carmin, JoAnn, and David Dodman. 2013. “Engaging Science and Managing Scientific Uncertainty in Urban Climate Adaptation Planning.” In *Successful Adaptation to Climate Change: Linking Science and Policy in a Rapidly Changing World*, edited by Susanne C. Moser and Maxwell T. Boykoff, 220–34. New York and London: Routledge.
- Carmin, JoAnn, Isabelle Anguelovski, and Debra Roberts. 2012. “Urban Climate Adaptation in the Global South: Planning in an Emerging Policy Domain.” *Journal of Planning Education and Research* 32 (1): 18–32. doi:10.1177/0739456X11430951.
- Carmin, JoAnn, David Dodman, and Eric Chu. 2013. “Urban Climate Adaptation and Leadership: From Conceptual to Practical Understanding”. 2013/26. OECD Regional Development Working Paper. Paris, France: Organisation for Economic Co-operation and Development (OECD). doi:10.1787/5k3ttg88w8hh-en.
- Castán Broto, Vanesa, and Harriet Bulkeley. 2013. “A Survey of Urban Climate Change Experiments in 100 Cities.” *Global Environmental Change : Human and Policy Dimensions* 23 (1): 92–102. doi:10.1016/j.gloenvcha.2012.07.005.
- Chatterjee, Monalisa. 2010. “Slum Dwellers Response to Flooding Events in the Megacities of India.” *Mitigation and Adaptation Strategies for Global Change* 15 (4): 337–53. doi:10.1007/s11027-010-9221-6.
- Chhotray, Vasudha, and Roger Few. 2012. “Post-Disaster Recovery and Ongoing Vulnerability: Ten Years after the Super-Cyclone of 1999 in Orissa, India.” *Global Environmental Change* 22 (3): 695–702. doi:10.1016/j.gloenvcha.2012.05.001.
- Chittibabu, P., S. K. Dube, J. B. Macnabb, T. S. Murty, U. C. Mohanty, and P. C. Sinha. 2004. “Mitigation of Flooding and Cyclone Hazard in Orissa, India.” *Natural Hazards* 31: 455–85.
- Ciplet, David, J. Timmons Roberts, and Mizan Khan. 2013. “The Politics of International Climate Adaptation Funding: Justice and Divisions in the Greenhouse.” *Global Environmental Politics* 13 (1): 49–68. doi:10.1162/GLEP_a_00153.
- Da Silva, Jo, Sam Kernaghan, and Andrés Luque. 2012. “A Systems Approach to Meeting the Challenges of Urban Climate Change.” *International Journal of Urban Sustainable Development* 4 (2): 125–45. doi:10.1080/19463138.2012.718279.

- Dipak, Sharma, and Dubey Arti. 2011. "Assessment and Treatment of Municipal Wastewater of Indore City of India." *Archives of Applied Science Research* 3 (1): 450–61.
- Dodman, David, and David Satterthwaite. 2009. "Institutional Capacity, Climate Change Adaptation and the Urban Poor." *IDS Bulletin* 39 (4): 67–74. doi:10.1111/j.1759-5436.2008.tb00478.x.
- Dubash, Navroz K., Markus Hagemann, Niklas Höhne, and Prabhat Upadhyaya. 2013. "Developments in National Climate Change Mitigation Legislation and Strategy." *Climate Policy* 13 (6) (November): 649–64. doi:10.1080/14693062.2013.845409.
- Ebi, Kristie L., and Jan C. Semenza. 2008. "Community-Based Adaptation to the Health Impacts of Climate Change." *American Journal of Preventive Medicine* 35 (5): 501–7. doi:10.1016/j.amepre.2008.08.018.
- Ebi, Kristie L., Tom Kram, Detlef P. van Vuuren, Brian C. O'Neill, and Elmar Kriegler. 2014. "A New Toolkit for Developing Scenarios for Climate Change Research and Policy Analysis." *Environment* 56 (2): 6–16. doi:10.1080/00139157.2014.881692.
- Edwards, Ferne, Jane Dixon, Sharon Friel, Gillian Hall, Kirsten Larsen, Stewart Lockie, Beverley Wood, et al. 2011. "Climate Change Adaptation at the Intersection of Food and Health." *Asia Pacific Journal of Public Health* 23 (2 Suppl): 91S–104S. doi:10.1177/1010539510392361.
- Few, Roger, Katrina Brown, and Emma L. Tompkins. 2007. "Public Participation and Climate Change Adaptation: Avoiding the Illusion of Inclusion." *Climate Policy* 7: 46–59.
- Finan, Timothy J., and Donald R. Nelson. 2009. "Decentralized Planning and Climate Adaptation: Toward Transparent Governance." In *Adapting to Climate Change: Thresholds, Values, Governance*, edited by W. Neil Adger, Irene Lorenzoni, and Karen O'Brien, 335–49. Cambridge: Cambridge University Press.
- Fisher, Susannah. 2012. "Policy Storylines in Indian Climate Politics: Opening New Political Spaces?" *Environment and Planning C: Government and Policy* 30 (1): 109–27.
- Friend, Richard, Jim Jarvie, Sarah Orleans Reed, Ratri Sutarto, Pakamas Thinphanga, and Vu Canh Toan. 2014. "Mainstreaming Urban Climate Resilience into Policy and Planning: Reflections from Asia." *Urban Climate* 7 (August): 6–19. doi:10.1016/j.uclim.2013.08.001.
- Fussler, Hans-Martin. 2007. "Vulnerability: A Generally Applicable Conceptual Framework for Climate Change Research." *Global Environmental Change* 17 (2): 155–67. doi:10.1016/j.gloenvcha.2006.05.002.
- Gomez-Echeverri, Luis. 2013. "The Changing Geopolitics of Climate Change Finance." *Climate Policy* 13 (5): 632–48. doi:10.1080/14693062.2013.822690.
- Government of India. 2008. *National Action Plan on Climate Change*. New Delhi, India: Prime Minister's Council on Climate Change, Government of India.
- Government of Odisha. 2010. *Orissa Climate Change Action Plan, 2010–2015*. Bhubaneswar, India: Government of Odisha.
- Gupta, H. K., K. Gupta, P. Singh, and R. C. Sharma. 2006. "A Sustainable Development and Environmental Quality Management Strategy for Indore." *Environmental Quality Management* 15 (4): 57–68. doi:10.1002/tqem.
- Halsnæs, Kirsten, and Sara Trærup. 2009. "Development and Climate Change: A Mainstreaming Approach for Assessing Economic, Social, and Environmental Impacts of Adaptation Measures." *Environmental Management* 43 (5): 765–78. doi:10.1007/s00267-009-9273-0.

- Hughes, Sara. 2013. "Justice in Urban Climate Change Adaptation: Criteria and Application to Delhi." *Ecology and Society* 18 (4): 48. doi:10.5751/ES-05929-180448.
- Hunt, Alistair, and Paul Watkiss. 2010. "Climate Change Impacts and Adaptation in Cities: A Review of the Literature." *Climatic Change* 104 (1): 13–49. doi:10.1007/s10584-010-9975-6.
- Huq, Saleemul, and Hannah Reid. 2004. "Mainstreaming Adaptation in Development." *IDS Bulletin* 35 (3): 15–21. doi:10.1111/j.1759-5436.2004.tb00129.x.
- Indore City Resilience Strategy for Changing Climate Scenarios. 2012. Edited by G. K. Bhat, V. P. Kulshreshtha, U. A. Bhonde, U. Rajasekar, A. K. Karanth, and M. K. Burvey. Indore, India: TARU Leading Edge.
- Indore Municipal Corporation. 2006. *Indore City Development Plan*. Indore, India: Indore Municipal Corporation.
- IPCC. 2014. *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Edited by C.B. Field, V.R. Barros, D.J. Dokken, K.J. Mach, M.D. Mastrandrea, T.E. Bilir, M. Chatterjee, et al. Cambridge and New York: Cambridge University Press.
- Karanth, Anup, and Diane Archer. 2014. "Institutionalising Mechanisms for Building Urban Climate Resilience: Experiences from India." *Development in Practice* 24 (4): 514–26. doi:10.1080/09614524.2014.911246.
- Kehew, Robert B., Mthobeli Kolisa, Christopher Rollo, Alejandro Callejas, Gotelind Alber, and Liana Ricci. 2013. "Formulating and Implementing Climate Change Laws and Policies in the Philippines, Mexico (Chiapas), and South Africa: A Local Government Perspective." *Local Environment* 18 (6): 723–37. doi:10.1080/13549839.2013.818949.
- Kernaghan, Sam, and Jo da Silva. 2014. "Initiating and Sustaining Action: Experiences Building Resilience to Climate Change in Asian Cities." *Urban Climate* 7 (November):47–63. doi:10.1016/j.uclim.2013.10.008.
- Klein, Richard J. T. 2010. "Linking Adaptation and Development Finance: A Policy Dilemma Not Addressed in Copenhagen." *Climate and Development* 2 (3): 203–6. doi:10.3763/cdev.2010.0049.
- Lesnikowski, Alexandra C., James D. Ford, Lea Berrang-Ford, Magda Barrera, Pam Berry, J. Vernon Henderson, and S. Jody Heymann. 2013. "National-Level Factors Affecting Planned, Public Adaptation to Health Impacts of Climate Change." *Global Environmental Change* 23 (5): 1153–63. doi:10.1016/j.gloenvcha.2013.04.008.
- Mathew, Supriya, Stefan Trück, and Ann Henderson-Sellers. 2012. "Kochi, India Case Study of Climate Adaptation to Floods: Ranking Local Government Investment Options." *Global Environmental Change* 22 (1): 308–19. doi:10.1016/j.gloenvcha.2011.11.005.
- Mathison, Camilla, Andrew Wiltshire, A. P. Dimri, Pete Falloon, Daniela Jacob, Pankaj Kumar, Eddy Moors, et al. 2013. "Regional Projections of North Indian Climate for Adaptation Studies." *Science of the Total Environment* 468–469 (December):S4–S17. doi:10.1016/j.scitotenv.2012.04.066.
- Menon, A., A. Levermann, J. Schewe, J. Lehmann, and K. Frieler. 2013. "Consistent Increase in Indian Monsoon Rainfall and Its Variability across CMIP-5 Models." *Earth System Dynamics* 4 (2): 287–300. doi:10.5194/esd-4-287-2013.
- Mercer, Jessica. 2010. "Disaster Risk Reduction or Climate Change Adaptation: Are We Reinventing the Wheel?" *Journal of International Development* 22 (2): 247–64. doi:10.1002/jid.1677.

- Mertz, Ole, Kirsten Halsnæs, Jørgen E Olesen, and Kjeld Rasmussen. 2009. "Adaptation to Climate Change in Developing Countries." *Environmental Management* 43 (5): 743–52. doi:10.1007/s00267-008-9259-3.
- Mishra, Sujit Kumar, and Niharranjan Mishra. 2010. "Vulnerability and Adaptation Analysis in Flood Affected Areas of Orissa." *Social Change* 40 (2): 175–93. doi:10.1177/004908571004000205.
- Moser, Susanne C., and Julia A. Ekstrom. 2011. "Taking Ownership of Climate Change: Participatory Adaptation Planning in Two Local Case Studies from California." *Journal of Environmental Studies and Sciences* 1 (1): 63–74. doi:10.1007/s13412-011-0012-5.
- Mukhopadhyay, Partha, and Aromar Revi. 2012. "Climate Change and Urbanization in India." In *Handbook of Climate Change and India: Development, Politics and Governance*, edited by Navroz K. Dubash, 303–16. London and New York: Earthscan.
- Nay, John Jacob, Mark Abkowitz, Eric Chu, Daniel Gallagher, and Helena Wright. 2014. "A Review of Decision-Support Models for Adaptation to Climate Change in the Context of Development." *Climate and Development* 6 (4): 357-367. doi:10.1080/17565529.2014.912196.
- Paavola, Jouni, and W. Neil Adger. 2006. "Fair Adaptation to Climate Change." *Ecological Economics* 56 (4): 594–609. doi:10.1016/j.ecolecon.2005.03.015.
- Patt, Anthony G., Detlef P. van Vuuren, Frans Berkhout, Asbjørn Aaheim, Andries F. Hof, Morna Isaac, and Reinhard Mechler. 2009. "Adaptation in Integrated Assessment Modeling: Where Do We Stand?" *Climatic Change* 99 (3–4): 383–402. doi:10.1007/s10584-009-9687-y.
- Pelling, Mark, and Kathleen Dill. 2009. "Disaster Politics: Tipping Points for Change in the Adaptation of Sociopolitical Regimes." *Progress in Human Geography* 34 (1): 21–37. doi:10.1177/0309132509105004.
- Puppim de Oliveira, Jose Antonio. 2013. "Learning How to Align Climate, Environmental and Development Objectives in Cities: Lessons from the Implementation of Climate Co-Benefits Initiatives in Urban Asia." *Journal of Cleaner Production* 58:7–14. doi:10.1016/j.jclepro.2013.08.009.
- Revi, Aromar. 2008. "Climate Change Risk: An Adaptation and Mitigation Agenda for Indian Cities." *Environment and Urbanization* 20 (1): 207–29. doi:10.1177/0956247808089157.
- Revi, Aromar, David Satterthwaite, Fernando Aragon-Durand, Jan Corfee-Morlot, Robert B.R. Kiunsi, Mark Pelling, Debra Roberts, William D. Solecki, Sumetee Pahwa Gajjar, and Alice Sverdluk. 2014. "Towards Transformative Adaptation in Cities: The IPCC's Fifth Assessment." *Environment and Urbanization* 26 (1): 11–28. doi:10.1177/0956247814523539.
- Rodima-Taylor, Daivi, Mette F. Olwig, and Netra Chhetri. 2012. "Adaptation as Innovation, Innovation as Adaptation: An Institutional Approach to Climate Change." *Applied Geography* 33:107–11. doi:10.1016/j.apgeog.2011.10.011.
- Rondinelli, Dennis A. 1983. *Development Projects as Policy Experiments: An Adaptive Approach to Development Administration*. London and New York: Methuen.
- Sharma, Divya, and Sanjay Tomar. 2010. "Mainstreaming Climate Change Adaptation in Indian Cities." *Environment and Urbanization* 22 (2): 451–65. doi:10.1177/0956247810377390.
- Sherman, Mya H., and James Ford. 2014. "Stakeholder Engagement in Adaptation Interventions: An Evaluation of Projects in Developing Nations." *Climate Policy* 14 (3): 417–41. doi:10.1080/14693062.2014.859501.

- Smith, Joel B., Thea Dickinson, Joseph D.B. Donahue, Ian Burton, Erik Haites, Richard J.T. Klein, and Anand Patwardhan. 2011. "Development and Climate Change Adaptation Funding: Coordination and Integration." *Climate Policy* 11 (3): 987–1000. doi:10.1080/14693062.2011.582385.
- Srinivasan, J. 2012. "Impacts of Climate Change on India." In *Handbook of Climate Change and India: Development, Politics and Governance*, edited by Navroz K. Dubash, 29–40. London and New York: Earthscan.
- Streck, Charlotte. 2010. "International Climate Architecture and Financial Flows for Adaptation." In *Climate Governance and Development: Berlin Workshop Series 2010*, edited by Albrecht Ansohn and Boris Pleskovic, 121–29. Washington, DC: The World Bank.
- Susskind, Lawrence. 2010. "Responding to the Risks Posed by Climate Change: Cities Have No Choice but to Adapt." *Town Planning Review* 81 (3): 217–35.
- Termeer, Catrien, Art Dewulf, and Gerard Breeman. 2013. "Governance of Wicked Climate Adaptation Problems." In *Climate Change Governance*, edited by Jörg Knieling and Walter Leal Filho, 27–39. Climate Change Management. Berlin, Heidelberg: Springer Berlin Heidelberg. doi:10.1007/978-3-642-29831-8.
- Thomalla, Frank, and Hanna Schmuck. 2004. "'We All Knew That a Cyclone Was Coming': Disaster Preparedness and the Cyclone of 1999 in Orissa, India." *Disasters* 28 (4): 373–87. doi:10.1111/j.0361-3666.2004.00264.x.
- Tyler, Stephen, and Marcus Moench. 2012. "A Framework for Urban Climate Resilience." *Climate and Development* 4 (4): 311–26. doi:10.1080/17565529.2012.745389.
- Uittenbroek, Caroline J., Leonie B. Janssen-Jansen, and Hens A. C. Runhaar. 2012. "Mainstreaming Climate Adaptation into Urban Planning: Overcoming Barriers, Seizing Opportunities and Evaluating the Results in Two Dutch Case Studies." *Regional Environmental Change* 13 (2): 399–411. doi:10.1007/s10113-012-0348-8.
- UN-Habitat. 2006. *Water Demand Management Strategy and Implementation Plan for Indore*. United Nations Human Settlements Programme (UN-Habitat).
- Wise, R.M., I. Fazey, M. Stafford Smith, S.E. Park, H.C. Eakin, E.R.M. Archer Van Garderen, and B. Campbell. 2014. "Reconceptualising Adaptation to Climate Change as Part of Pathways of Change and Response." *Global Environmental Change* 28:325–36. doi:10.1016/j.gloenvcha.2013.12.002.
- World Bank. 2010. *Development and Climate Change: Stepping up Support to Developing Countries*. Washington, DC: The World Bank.

Planning on Disaster: Urban Climate Change Adaptation in Metro Manila, Philippines¹

Alisa Zomer

Yale School of Forestry & Environmental Studies

ABSTRACT

Metro Manila, the Philippines' capital region, is highly vulnerable to climate change impacts such as sea level rise and increased severity of tropical storms. Despite the scientific evidence and public acceptance of climate risks, urban climate adaptation in Manila is fragmented due to the rules and social norms that guide interactions between local decision makers, national policymakers, and international donors. Based on more than forty interviews conducted in-country, this paper provides a descriptive account of adaptation actions in Manila and argues that these efforts are fragmented due to lack of coordination and sovereignty barriers—barriers that must be overcome to advance urban climate actions.

1 This research was made possible with generous funding from the Tropical Resources Institute, Yale Council on Southeast Asia Studies at the Macmillan Center, Carpenter-Sperry Fund at the Yale School of Forestry and Environmental Studies, and the Yale Climate and Energy Institute. Thank you to the following people for their support on methods training, substantive direction and editing: Professor Benjamin Cashore, Professor Karen Seto, Professor Karen Hebert, Professor Angel Hsu, and Michael Stone (Yale F&ES PhD candidate). Lastly, special thanks for guidance and support from Athena Ballesteros, Dean Tony La Viña, Red Constantino, Reina Garcia, Kairos Dela Cruz, and the team at the Institute for Climate and Sustainable Cities.

INTRODUCTION

In recent years, cities have emerged as key political units in addressing climate change. While early city climate actions focused on mitigation, cities are increasingly integrating adaptation activities into their climate planning. This shift recognizes linkages between climate change and worsening disaster events and the need to simultaneously reduce disaster risk and increase climate resilience (Solecki et al. 2011). Research on urban climate adaptation maintains that, although internal factors motivated early city adaptation (Anguelovski and Carmin 2011; Carmin et al. 2009, 2012), later urban adaptation actions were heavily influenced by international processes and donor priorities (Carmin et al. 2009). Manila² falls into the latter category as a late adapter and urban climate adaptation efforts in the metropolitan region are in large part influenced by external players, including bilateral and multilateral donors.

These international donors tend to support national-level agencies to advance climate actions in Manila from a regional, top-down planning perspective. As a result of this arrangement, there is a gap between national agencies that receive international aid and those that make decisions at a local level in Manila. This gap is exacerbated by strong decentralized governance in the Philippines, where subnational decision makers have significant power and authority to determine local affairs. This paper provides a descriptive account of adaptation actions in Manila and argues that adaptation efforts are fragmented due to lack of coordination and sovereignty barriers—barriers that must be overcome to improve urban climate resilience.

Given the high risk of climate impacts in Manila, including sea level rise, storm surge, land subsidence, increased flooding, and tropical storm impacts (Muto et al. 2010; Philippines Climate Change Commission 2010; ADB 2009), this case study provides an important addition to the emerging literature on urban climate governance. There has been relatively little written about Manila on this topic. Though the country takes

2 “Metro Manila” refers to the National Capital Region of the Philippines, including 17 local government units (or 16 cities and 1 municipality), one of which is Manila City. For purposes of simplicity, “Manila” will be used interchangeably with “Metro Manila” throughout the paper and is meant to refer to the entire metropolitan region.

an active role in national climate policy³ and international climate negotiations, urban climate adaptation policy has not been a top priority in the Philippines. As such, this research fills a knowledge gap to better understand the drivers of adaptation actions in Manila and the challenges for future implementation. Additionally, findings in Manila may provide further insights into studying other megacities in developing countries facing similar climate change threats. The paper is organized in three main sections including a brief overview of relevant literature and methodology, findings, and discussion and policy implications.

BACKGROUND AND METHODS

Research in the emerging field of urban climate governance suggests that adaptation policies are motivated more by endogenous factors and internal goals than by external influences (Anguelovski and Carmin 2011; Carmin et al. 2009, 2012). This phenomenon can be understood as a factor in that adaptation efforts respond to actual or imminent climate impacts and are more localized than the relatively distant prospect of global greenhouse gas mitigation (Bai 2007). Since adaptation approaches are comparatively new to mitigation policy, the absence of formalized institutions to organize activities results in entrepreneurial approaches spread across different actors and sectors (Anguelovski and Carmin 2011).

Furthermore, there is an important distinction between “early adopter” cities that were the first to take on adaptation and cities that are more recently taking on adaptation policies, which are more influenced by international processes and donor priorities (Carmin et al. 2009). In this regard, Manila occupies an interesting niche because the city is not featured as an early adopter in existing literature, nor is it an active member

3 Climate legislation in the Philippines: Climate Change Act (2009), National Framework Strategy on Climate Change (2010), National Disaster Risk Reduction and Management Act (2010), and People’s Survival Fund (2012).

of international city climate initiatives and networks.⁴ Given Manila's high risk to climate impacts, the city's lack of recognition in this space is surprising and was an early motivation for this case study.

Fieldwork consisted of over two months in Manila (June through early August 2013) and data were collected through semistructured interviews and archival analysis. Over forty interviews were conducted with approximately fifty individuals from a variety of backgrounds including local and national governments, local and international non-governmental organizations, bilateral aid agencies, intergovernmental organizations, academia, business, and media. Respondents were selected using snowball methods as well as leads identified in archival analysis, practitioner and academic literature, and during local events.

Analysis of data collected occurred through process tracing, which uses descriptive accounts to understand how events unfold over time. The purpose of this method is to unpack the multiplicity of influences on any given decision to better understand why a decision or set of decisions is taken. Though it is difficult to directly measure influence, process tracing provides a method to carefully consider how contextual factors impact actions through deductive reasoning and causal logics. This methodology helps to parse out how local decision makers are influenced by international factors and policy mechanisms and in turn projects how these factors might affect long-term policy decisions.

In the case of cities, once streets are set and building foundations poured, it is difficult and costly to make changes. As a result, urban areas present significant challenges to adaptation efforts due to path dependencies, which lock in inefficiencies and maladaptation for generations (Seto and Shepherd 2009). The constraints around changing the built environment emphasize the importance of understanding what motivates and influences urban planning decisions in the short and long terms. Data collected through interviews helped to create an exploratory mapping of urban climate initiatives

4 Examples of international city and climate initiatives: International Council for Local Environmental Initiatives (ICLEI) Cities for Climate Protection program, C40 Cities Climate Leadership Group, Asian Cities Climate Change Resilience Network, and multilateral initiatives such as the United Nations Human Settlement Programme's (UN-Habitat) Cities and Climate Change Initiative and programs by the World Bank Urban Development and Local Government and United Nations Environment Programme's (UNEP) Urban Environment Unit.

in Metro Manila to better understand what adaptation efforts are emerging and how they are influenced by endogenous and exogenous factors.

FINDINGS

Interview findings demonstrate a plethora of research and projects ongoing in Manila that focus on urban climate adaptation (see Table 1).

Several barriers to urban climate adaptation in Manila emerged throughout interviews. The first is how decentralized governance makes it difficult to coordinate adaptation efforts at a metropolitan-wide scale. The disaggregation of regional decision making impacts the ability of international donors to support adaptation efforts in Manila because of institutional and sovereignty issues. Specifically, there is no single regional body that has the necessary mix of authority and power to create and implement urban adaptation strategies across different scales. This institutional weakness links to sovereignty issues because it is perceived as more appropriate for governments outside the Philippines to give directly to national-level agencies. As a result, a gap persists between donor efforts at the national level and urban adaptation needs at the local level. These trends will be described in more detail below.

Coordination Barriers

Manila is not a typical megacity. When most people refer to “Manila” they usually mean Metro Manila, which includes sixteen cities and one municipality. These seventeen local government units (LGUs) make up the metropolitan region and are governed separately through strong decentralized laws. Following the decades-long dictatorship of Ferdinand Marcos, the Philippines passed the Local Government Code in 1991, which supported devolution of rights to local decision makers as a way to more widely and equitably distribute political power. The strength of local decision making can be interpreted as a reaction to the country’s long history of colonialism and dictatorship and is an attempt to promote democratic norms through hard law (see Table 2).

Table 1: Mapping of Climate Actions in Manila

Table provides an overview of select data derived from interviews and archival analysis. Climate actions are organized by different categories to highlight different trends in scope, scale, and focus.

	Metro Manila-wide Action	City-Specific Action in Manila	Urban focus, NOT in Manila	Climate Adaptation /DRR Focus	Climate Mitigation Focus	Urban Poor Focus	Role/ Type of Assistance**	Geographic Scope (global, regional, national)
BILATERAL AID AGENCIES								
Australian Aid*	✓	✓		✓		✓	Tech./\$\$	Global
CIDA		✓		✓			Tech./\$\$	Global
DFID			✓	✓			Tech./\$\$	Global
GIZ*			✓		✓		Tech./\$\$	Global
IDRC		✓		✓		✓	Tech./\$\$	Global
JICA	✓	✓		✓			Tech./\$\$	Global
KICA		✓		✓			Tech./\$\$	Global
USAID*			✓		✓		Tech./\$\$	Global
MULTILATERAL AID AGENCIES								
ADB	✓	✓		✓	✓		Research/ Tech./\$\$	Regional
UNDP*	✓	✓		✓			Research/ Tech.	Global
UN-Habitat*	✓	✓	✓	✓		✓	Coord./ Tech.	Global
UNISDR		✓		✓			Coord./ Tech.	Global
World Bank	✓	✓		✓	✓	✓	Research/ Tech./\$\$	Global
PRIVATE FOUNDATIONS								
Asia		✓		✓			\$\$	Global/ Regional
Ford		✓		✓		✓	\$\$	Global
Rockefeller		✓		✓		✓	\$\$	Global

	Metro Manila-wide Action	City-Specific Action in Manila	Urban focus, NOT in Manila	Climate Adaptation /DRR Focus	Climate Mitigation Focus	Urban Poor Focus	Role/ Type of Assistance**	Geographic Scope (global, regional, national)
ACADEMIA								
Ateneo School of Government*	✓	✓		✓		✓	Advoc./ Research	National
Ateneo School of Sociology & Anthropology*	✓	✓		✓		✓	Research	National
UP EML Lab ⁵ *	✓	✓		✓			Research	National
UP SURP ⁶ *	✓	✓		✓			Research	National

5 University of the Philippines Environmental Monitoring Lab, which houses Project Noah.

6 University of the Philippines School of Urban and Regional Planning.

7 Oscar Lopez Center is a research center that is part of the Lopez Corporation Foundation.

	Metro Manila-wide Action	City-Specific Action in Manila	Urban focus, NOT in Manila	Climate Adaptation /DRR Focus	Climate Mitigation Focus	Urban Poor Focus	Role/ Type of Assistance**	Geographic Scope (global, regional, national)
NON-GOVERNMENT ORGANIZATIONS (NGOs)								
Clean Air Asia*		✓			✓		Coord./ Research	Regional
Christian Aid*		✓		✓		✓	Advoc./ Research	Global
Disaster Risk Reduction Network Philippines (DRRNet)				✓			Advoc./ Coord.	National
Local Governments for Sustainability (ICLEI)*		✓	✓		✓		Coord./ Tech.	Regional/ Global
Institute for Climate and Sustainable Cities (ICSC)*		✓		✓	✓		Advoc./ Research	National
La Liga Policy Institute*		✓		✓		✓	Advoc./ Coord.	National
Manila Observatory*	✓	✓		✓	✓		Research/ Tech.	National
OML Center ^{7*}	✓			✓			Research/ Tech.	National
Partnership of Philippine Support Service Agencies (PHILSSA)*	✓	✓		✓		✓	Advoc./ Coord.	National

* Indicates data collected from interviews during field research (June–August 2013).

** Types of assistance include: financial (\$\$), technical (Tech.), research, coordination (Coord.), and advocacy (Advoc.).

Table 2: Timeline of relevant governance and climate change laws, policies, and events

Year	Event	Significance to urban governance or climate change actions
1975 †	Metro Manila Commission (MMC) headed by Imelda Marcos	Created regional coordinating body for the National Capital Region to address rapid urbanization problems (i.e., safety, housing, flooding, traffic, and environmental degradation). Recommended by Philippine delegation at 1972 UN Stockholm Conference on the Human Environment (Einsiedel 2009). MMC given powers to make rules, levy taxes, and undertake social, economic, and physical planning and development for region. (Presidential Decree No. 824).
1986 †	People Power Revolution	Marcos dictatorship ends, 1987 constitution passed.
1990 †	MMC becomes Metro Manila Authority (MMA)	Metro Manila Council was the decision-making body, which was made up of Manila’s mayors with a chairman appointed by the president. The council had no legislative powers and was significantly weaker than its predecessor in terms of finance and executive authority (Manasan and Mercado 1999). (Executive Order No. 392).
1991 †	Local Government Code	Code gives strong authority and powers to local government units. (Republic Act No. 7160).
☀	Inter-Agency Committee on Climate Change	The Philippines creates national Inter-Agency Committee on Climate Change in 1991 to coordinate climate activities (IACCC 1999).
1995 ☀	ICLEI, Cities for Climate Protection	First network of cities working on climate issues is created, following the creation of the UNFCCC during the Rio de Janeiro 1992 Earth Summit.
1995 †	MMA becomes Metropolitan Manila Development Authority (MMDA)	Following the LGU code and the solidification of decentralization, the Metropolitan Manila Authority was renamed and restructured to its current iteration, MMDA. The council still serves as the decision-making body, but mayors have significant authority over issues within their local jurisdictions. Interviews with MMDA officials as well as non-governmental organizations confirmed that while the MMDA is mandated to oversee Manila-wide affairs, the agency has little authority to implement change. (Republic Act 7924).

Year	Event	Significance to urban governance or climate change actions
1999 ☼	Philippines Initial National Communication on Climate Change	Details the country's 1994 greenhouse gas inventory and commitments under the UNFCCC. Urban population growth stated as a major stressor on coastal ecosystems, fresh water resources, and agricultural land conversion to urban and industrial uses. Metro Manila cited as the fastest growing urban region, at a rate of 3.6%, projected to experience a one meter sea level rise and 60–100% increase in annual rainfall based on a 2–3°C temperature increase. Waste management and fresh water resources are discussed as challenges for Manila.
2005/ 2006 ☼	City climate networks founded	C40 Cities Climate Leadership Group UN-Habitat Cities and Climate Initiative Asian Cities Climate Change Resilience Network (Rockefeller Foundation)
2009 ◆	Typhoon Ketsana	Severe flooding in Manila, public recognition of climate change impacts and disaster linkages.
☼	Climate Change Act (CCA)	"Cities" cited twice: 1) "President of the League of Cities will be a member on the Climate Change Commission, a cross-agency body created in the law to coordinate actions on climate"; 2) "identifying responsibility of the Commission to "Coordinate with local government units and private entities to address vulnerability to climate change impacts of regions, provinces, cities and municipalities." (Republic Act No. 9729).
2010 †	National Disaster Risk Reduction Management Act (NDRRM)	Two urban-specific references: 1) "2(g) Mainstream disaster risk reduction and climate change in development processes such as policy formulation, socio-economic development planning, budgeting, and governance, particularly in the areas of environment, agriculture, water, energy, health, education, poverty reduction, land-use and urban planning, and public infrastructure and housing, among others"; 2) "Chairman of the Housing and Urban Development Coordinating Council will be on the NDRRM Council under Department of National Civil Defense." (Republic Act No. 10121).
2012 ☼	People's Survival Fund	National climate finance fund by the Philippines government and an amendment to the 2009 CCA. Early funding priorities went to rural adaptation efforts. (Republic Act No. 10174).
2013 ◆	Typhoon Haiyan	Most powerful typhoon recorded to hit landfall, high casualties and economic losses.
2014 †	Comprehensive Land Use Bill (not yet law)	Bill in development to mandate that LGUs integrate climate change adaptation and disaster risk reduction considerations into comprehensive land use plans (CLUPs).

☼ = *Climate-related events*

† = *Institution/policy development*

◆ = *Disaster event*

One barrier cited in interviews was the perceived difficulty of approaching the region as a whole due to issues of scale, governance, and politics.⁸ Particularly, the task of coordinating multiple jurisdictions and mayoral offices was considered too big an endeavor to take on. The Metropolitan Manila Development Authority (MMDA) is the regional coordinating body for the National Capital Region, but the government agency lacks real implementation power. The weakening of this regional body occurred over several restructurings following the People Power Revolution in 1986.⁹ The MMDA is tasked with overseeing metro-wide plans but is weak in terms of finance and executive authority (Manasan and Mercado 1999).

Mayors who head the LGUs make up the backbone of the country's political structure and each LGU has significant authority and decision-making powers within its boundaries. In recent years, new laws and coordinating bodies have been created to oversee the integration of climate and disaster considerations throughout the country. At the local level, this has translated into mandates for LGUs to develop comprehensive land use plans (CLUPs) to address climate and disaster risks. Ultimately, it is the LGUs that are responsible for developing plans in their jurisdictions; however, there is great variety in terms of the size, populations, and resources of LGUs across Manila and the rest of the country. Lack of LGU capacity—technical, personnel, and financial—was frequently cited in interviews as a difficulty for LGUs to adequately integrate climate and disaster policies in their CLUPs.¹⁰ As a result, interviewees stated that although the climate and disaster laws are robust on paper, implementation is weak. Even well-resourced LGUs in Manila were hiring international firms to develop their risk and multihazard maps. One respondent also mentioned that the scandal over pork-barrel spending¹¹ and corruption in the national

8 Interview with representatives from UN-Habitat, July 25, 2013; League of Cities of the Philippines, August 1, 2013.

9 People Power Revolution in 1986 was a bloodless, popular movement that overthrew the Marcos dictatorship.

10 Interview with representatives from the Department of the Interior and Local Governments, August 7, 2013.

11 Refers to a 2013 corruption scandal during which members of Congress and the Senate were caught directing millions of dollars from the national budget into “shell” organizations for questionable use.

government is pervasive at the local level, making it difficult to predict and motivate local actors.¹²

Though strong decentralized governance presents coordination barriers, especially for LGUs that lack capacity and resources, there were examples of efforts to overcome cross-jurisdictional challenges. One effort is the Alliance of Seven (A-7), a coalition of mayors located in the Marikina Watershed that includes the municipalities of Cainta, Rodriquez, and San Mateo and the cities of Antipolo, Marikina, Pasig, and Quezon. The A-7 was formed following severe flooding during Typhoon Ketsana and is an attempt to work together at the ecosystem scale to develop an improved early warning and coordinated response system. The A-7 was coordinated by a non-governmental organization, the La Liga Policy Institute, which was working to strengthen resilience to disaster and climate through cooperation and integrate comprehensive land use plans within each LGU across the watershed.¹³ The La Liga Policy Institute was originally funded by the Asian Foundation for their work on coordinating A-7.¹⁴ At the time of data collection, there was some uncertainty as to the future of A-7 activities, but this type of ecosystem-scale approach motivated by endogenous factors could serve as a model to improve coordination.

Sovereignty Barriers

Although coordination barriers present challenges to working across different scales of governance, sovereignty barriers impact how donors work with governments and institutions in-country. Sovereignty refers to the right of a country to govern itself and certain types of international aid could be perceived as a challenge to a government's authority. In the case of climate change, sovereignty is particularly sensitive due to equity issues around the historical responsibility associated with climate change drivers and rights of non-developed countries. As a result, direct giving to subnational agencies in the Philippines could be perceived as an inappropriate attempt to subvert national sovereignty and influence local affairs. This would be particularly

12 Interview with representative from the Institute for Climate and Sustainable Cities, July 28, 2013.

13 Interview with representative from La Liga Policy Institute, July 17, 2013.

14 Interview with representative from Australian Aid, July 17, 2013.

true for bilateral donors, as opposed to private foundations and regional development banks, which may have more flexibility. It is important to note that there is a spectrum of arrangements in which funders are working with different groups to advance urban climate policy and these observed trends are not rules, but guiding norms.

Given the perceived levels of appropriate giving, bilateral donors tend to work with national-level agencies because it is considered to be a peer-to-peer level of exchange. These projects between national government agencies often focus on top-down, technical analysis. Top-down planning can oftentimes create policies with plans and objectives that are disconnected from realities and needs on the ground (Sabatier 1986). For instance, there are a number of efforts to develop multihazard maps of Manila that look at vulnerability factors related to natural hazards, such as earthquakes and flooding. Australian Aid was financing two such projects with national-level agencies that looked at adaptation planning from a metro-wide scale. The first project was with the Office of Civil Defense, which is the national agency in charge of coordinating response and recovery in the case of disaster events.¹⁵ The Office of Civil Defense along with technical assistance from Geoscience Australia¹⁶ was developing a risk analysis for the greater Metro Manila area focusing on three hazards: flooding, severe wind, and earthquakes. The risk analysis simulates different scenarios to project beyond a 200-year event using a variety of river and urban flood models as well as satellite technology (LIDAR). The project started after Typhoon Ketsana as a response to the realization that urban flooding is a growing threat.

Prior to the Manila risk analysis project, Australian Aid was already working on disaster risk management in the Philippines, a strategy influenced by the international Hyogo Framework on disaster risk reduction.¹⁷

15 Interviews with representatives from Australian Aid, July 17, 2013 and the Office of Civil Defense, July 24, 2013.

16 Australia's national geological survey.

17 In 2005 under UNISDR, "The Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters" brought attention to the growing impact of disasters due to changing population and socioeconomic trends as well as unplanned urbanization and climate change, among other factors. Available online: <http://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf>.

From 2007 to around 2010, Australian Aid worked with the Philippines Office of Civil Defense and Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) to focus on readiness programs with an emphasis on hazard mapping as well as community-based risk management. These projects were focused in vulnerable communities outside of Manila, showing a recent shift to focus on urban issues.

Another project funded by Australian Aid was with the MMDA to develop a comprehensive plan for Manila, entitled Metro Manila Greenprint 2030.¹⁸ The Greenprint is meant to integrate climate and disaster considerations and provide a long-term plan for infrastructure, finance, and land use decisions. At the time of data collection, MMDA was also working on a climate change action plan for Manila. Representatives from MMDA noted, however, that although they were working with local councils and vice-mayors to be part of these plans, MMDA has no legal mechanism to enforce compliance.

Although these mapping efforts are important steps in assessing risk for the purposes of planning, there was limited engagement with mayors and LGU officials in their development. As a result, the translation of these technical findings to decision makers who impact action on the ground is uncertain. Furthermore, given the disparity of LGU capacity to meaningfully integrate disaster and climate considerations in planning, sovereignty persists as a barrier to urban adaptation efforts.

DISCUSSION AND POLICY IMPLICATIONS

Untangling the multitude of urban climate actions and the factors influencing them is difficult given the overlap of actors, donors, geographies, and issue areas. It is evident that donors often take a multipronged approach to move forward on urban climate issues by working with multiple groups and using different approaches. Still, there are trends that emerge in terms of what types of donors work with which groups in the Philippines. For instance, bilateral and multilateral aid agencies tend to work directly with national-level government agencies. This exchange between peer levels of

¹⁸ Interviews with representatives from Australian Aid, July 17, 2013 and MMDA, July 31, 2013.

governance can be perceived as appropriate because it does not threaten national sovereignty as might a direct exchange to local government.

The role of cities in addressing global problems and the emergence of transnational networks challenge the traditional boundaries of local, regional, and state governments as well as the structure of environmental politics (Betsill and Bulkeley 2007; Bulkeley and Betsill 2005). That said, there are intermediary institutions, such as development banks, that can help direct international funds more locally within a country. Additionally, there are instances of bilateral aid agencies, such as GIZ, working in other Philippines cities, but they do not work in Manila.¹⁹ Part of this is due to strategic decisions to work in small and medium-size cities, but there is also a perceived risk of working in Manila because it is the capital and more politically charged. Therefore, channels of aid are, to some extent, limited by issues of political sovereignty and there is a gap between those who receive funds to work on urban climate issues and the actual city decision makers, who are mayors and LGU officials.

The diffusion of urban climate policies from the international arena to national-level agencies also precipitates a top-down approach to data collection that is more map and technology based, as is evident with the multihazard mapping projects. On the other hand, aid from private foundations and international research institutions tends to fund more bottom-up approaches to assessing climate vulnerabilities on the ground through community-based methods.²⁰ Despite this gap regarding how external factors influence climate actions across Manila, it may be an issue of time in regards to how these approaches eventually influence CLUPs and local planning decisions. In this sense, academic institutions play an important intermediary role because they are funded by bilateral, multilateral, and private donors on urban climate issues in Manila. This role may be due to the capacity of academic institutions to provide high quality quantitative and qualitative data and also maintain independence and neutrality as research institutions.

Whether these efforts will result in adaptive change on the ground will largely depend on local efforts to promote compliance and monitoring on

19 Interview with representative from Clean Air Asia, July 9, 2013.

20 Interviews with representatives from Christian Aid, July 23, 2013, and the Philippines Red Cross, July 25, 2013.

the ground. The creation of coordinating bodies is often an important first step to address complex problems across multiple scales of governance. The reach of these institutions, however, is limited by their regulatory and implementing authority. This case study was done at early stages in the development of urban climate plans in Manila and it is a fast-developing area as international and national climate strategies develop. The recommendations below are designed to improve donor priorities and promote coordination across governance levels in order to advance urban adaptation planning in Manila:

- *Coordination mechanisms and incentives.* Develop legal and financial mechanisms for sharing resources, such as equipment and expert personnel, across LGU borders to capitalize on existing capacity and allow for planning at regional and ecosystem scales within Metro Manila. This could take the form of strengthening the MMDA through implementing power or providing legal mechanisms for cities to coordinate finances and resources across LGU boundaries. The A-7 provides a promising example of this type of arrangement, but additional incentive structures are needed to ensure compliance and promote cross-border cooperation.
- *Targeted international aid.* Coordinate strategies and priorities amongst international funders to make these approaches more targeted and complementary. The post-2015 climate and development agendas provide a new opportunity to reshape international aid, and careful monitoring of donor priorities will be critical in understanding how these exogenous factors influence local decision making.
- *Civil society capacity.* Build civil society capacity to work together across urban issues, such as economic development, environment, health, labor, and housing. Though the Philippines has a robust network of non-government organizations working on climate change, there are very few working on urban climate adaptation issues. To promote strong participatory governance and accountability mechanisms it is important to support participation and discourse between government and civil society.
- *Participatory and flexible planning.* Integrate access to information, participation, and justice into legal procedures and policies on urban

planning. The current top-down adaptation actions do not account for local knowledge and contexts on the ground. This is particularly important because poor or vulnerable populations that will be most affected by climate change impacts and poor urban planning, are most frequently left out of decisions on urban infrastructure that are meant to reduce their vulnerability (Tompkins and Adger 2004). Community engagement and knowledge is a key component in strengthening the capacity of communities for disaster risk prevention and response (Pelling 2003; Tompkins and Adger 2004) and more bottom-up approaches can help localize adaptation efforts.

- *Linking science to action.* Develop knowledge platforms and training modules to share best practices and translate academic research on urban adaptation for planning professionals and policy makers. There is a wealth of research on urban climate change that needs to be made legible and policy relevant to help improve the ability of local government officials to make better decisions based on robust scientific evidence and local data.

Given that urban climate adaptation is a fast developing policy space, there are several directions in which to clarify and expand the Manila case study. Future research topics to enhance knowledge might include:

- *Ecosystem-scale approach.* Close analysis of the A-7 around the Marikina Watershed in terms of how innovative governance arrangements can successfully plan at the ecosystem scale will be important in developing effective coordination tools and mechanisms. Landscape planning is rising as a dominant approach for environmental management and integrating this approach into urban climate adaptation and disaster risk reduction in an urban setting will be instrumental for planning.
- *Land use planning.* Urban and land use planning are identified as underutilized tools in addressing urban climate risks (IPCC 2014). A better understanding of land use planning tools, such as zoning and building codes, in Manila is critical to developing, implementing, and monitoring comprehensive land use plans with integrated climate and disaster risk reduction considerations.

- *Informal settlements.* Informal settlements, whose populations are particularly vulnerable to disaster and climate impacts, make up nearly 30% of Manila's built environment (UN-Habitat 2003). Addressing land tenure issues in informal settlements and assessing the vulnerability and capacity of these populations will be important in planning a more resilient Manila.
- *Rural-urban linkages.* There is growing demand for an urban science to better understand complex relationships, for example, between urbanization and environmental degradation and how poverty relates to urbanization across rural to urban gradients (Solecki et al. 2013). Research on the drivers of urbanization will be critical to any land use planning efforts in Manila, especially as they relate to economic development and social well-being in cities.

To conclude, one respondent recounted a request from President Benigno Aquino indicating the president wanted to be able to say that though the Philippines is most vulnerable to climate and disaster risks, it is also the most prepared.²¹ The respondent is now tasked with developing criteria to link scientific variables to a status of preparedness to showcase the country's proactive stance on disaster risk reduction and climate change. How the Philippines proceeds on urban climate planning in Manila, and in other cities, will be a strong determinant of whether the country can achieve high levels of climate resilience. Following Typhoons Ketsana and Haiyan, the people of the Philippines have come to accept more intense storms as the "new normal." Although evidence of adaptation activities in Manila is encouraging, it remains to be seen whether these emerging initiatives can have real impact for people at the street level.

21 Interview with representative from University of the Philippines Environmental Monitoring Lab, July 29, 2013.

REFERENCES

- Anguelovski, Isabelle, and JoAnn Carmin. 2011. "Something Borrowed, Everything New: Innovation and Institutionalization in Urban Climate Governance." *Current Opinion in Environmental Sustainability* 3:169–75. doi: 10.1016/j.cosust.2010.12.017.
- Asian Development Bank (ADB). 2009. "The Economics of Climate Change in Southeast Asia: A Regional Review." April. <http://www.adb.org/publications/economics-climate-change-southeast-asia-regional-review> (accessed April 2012).
- Bai, Xuemei. "Integrating Global Environmental Concerns into Urban Management: The Scale and Readiness Arguments." 2007. *Journal of Industrial Ecology* 11:15–29. doi: 10.1162/jie.2007.1202.
- Betsill, Michele M., and Harriet Bulkeley. 2007. "Looking Back and Thinking Ahead: A Decade of Cities and Climate Change Research, Local Environment." *The International Journal of Justice and Sustainability* 12:447–56. doi: 10.1080/13549830701659683.
- Bulkeley, Harriet, and Michele Betsill. 2005. "Rethinking Sustainable Cities: Multilevel Governance and the 'Urban' Politics of Climate Change." *Environmental Politics* 14:42–63. doi: 10.1080/0964401042000310178.
- Carmin, JoAnne, Isabelle Anguelovski, and Debra Roberts. 2012. "Urban Climate Adaptation in the Global South: Planning in an Emerging Policy Domain." *Journal of Planning Education and Research* 32:18–32. doi: 10.1177/0739456X11430951.
- Carmin, JoAnne, Isabelle Anguelovski, and Debra Roberts. 2009. "Planning Climate Resilient Cities: Early Lessons from Early Adapters." Paper presented at World Bank, 5th Urban Research Symposium, Cities and Climate Change, Marseille France, June.
- Einsiedel, Nathaniel von. 2009. "METRO MANILA: A Case Study in Metropolitan Planning and Governance." East-West Center. http://www.eastwestcenter.org/fileadmin/resources/seminars/Urbanization_Seminar/Governance_and_Planning_in_Metro_Manila__Nathaniel_von_Einsiedel_.pdf (accessed April 2014).
- Inter-Agency Committee on Climate Change (IACCC). 1999. "The Philippines' Initial National Communication on Climate Change, December 1999." <http://unfccc.int/resource/docs/nat/phinc1.pdf> (accessed April 2013).
- International Panel on Climate Change (IPCC). 2014. "Chapter 12: Human Settlements, Infrastructure and Spatial Planning." http://report.mitigation2014.org/drafts/final-draft-postplenary/ipcc_wg3_ar5_final-draft_postplenary_chapter12.pdf (accessed July 2014).
- International Panel on Climate Change (IPCC). 2007. "Climate Change 2007: Working Group II: Impacts, Adaptation and Vulnerability. 10.2.3: Observed changes in extreme climatic events." http://www.ipcc.ch/publications_and_data/ar4/wg2/en/ch10s10-2-3.html (accessed March 2014).
- Manasan, Rosario G., and Ruben G. Mercado. 1999. "Governance and Urban Development: Case Study of Metro Manila." Discussion Paper Series No. 99–03, Philippines Institute for Development Studies (PIDS), February.
- Metropolitan Manila Development Authority. 2012. "Metro Manila Greenprint 2030." <http://www.mmda.gov.ph/greenprint.html/> (accessed July 2013).
- Muto, M., Morishita, K., and Syson, L. 2010. "Impacts of Climate Change upon Asian Coastal Areas: The Case of Metro Manila." Japanese International Cooperation Agency (JICA), Research Institute Working Paper.

- National Disaster Risk Reduction and Management Council of the Philippines, Office of Civil Defense. 2010. National Disaster Risk Reduction and Management Act of the Philippines (NDRRM). 2010. <http://www.ifrc.org/docs/idrl/878EN.pdf> (accessed December 2012).
- Pelling, Mark. 2003. *The Vulnerability of Cities: Natural Disasters and Social Resilience*. London: Earthscan.
- Philippines Climate Change Commission. 2011. People's Survival Fund (PSF). <http://climate.gov.ph/index.php/peoples-survival-fund> (accessed December 2012).
- Philippines Climate Change Commission, Office of the President. 2010. National Framework Strategy on Climate Change (NFSCC) 2010–2022. http://www.dost.gov.ph/index.php?option=com_joomdoc&task=cat_view&gid=314&Itemid=209 (accessed December 2012).
- Philippines Climate Change Commission. 2009. Climate Change Act of the Philippines (CCA). http://www.unhabitat.org/downloads/docs/12687_1_595438.pdf (accessed December 2012).
- Sabatier, Paul A. 1986. "Top-Down and Bottom-Up Approaches to Implementation Research: A Critical Analysis and Suggested Synthesis." *Journal of Public Policy* 6:21–48.
- Seto, Karen C., and J. M. Shepherd. 2009. "Global Urban Land-Use Trends and Climate Impacts." *Current Opinion in Environmental Sustainability* 1:89–95. doi: 10.1016/j.cosust.2009.07.012.
- Solecki, William, Karen C. Seto, and Peter J. Marcotullio. 2013. "It's Time for an Urbanization Science." *Environment: Science and Policy for Sustainable Development* 55:12–17. doi: 10.1080/00139157.2013.748387.
- Solecki, William, R. Leichenko, and K. O'Brien. 2011. "Climate Change Adaptation Strategies and Disaster Risk Reduction in Cities: Connections, Contentions, and Synergies." *Current Opinion in Environmental Sustainability* 3:135–41. doi: 10.1016/j.cosust.2011.03.001.
- Tompkins, E. L., and W. N. Adger. 2004. "Does Adaptive Management of Natural Resources Enhance Resilience to Climate Change?" *Ecology and Society* 9:10.
- United Nations Human Settlement Programme (UN-Habitat). 2003. *The Challenge of Slums: Global Report on Human Settlements 2003*, 195–228 London: Earthscan.

The Politics of Flood Vulnerability in Informal Settlements around the Korle Lagoon in Accra, Ghana

Clifford Amoako

*Social and Political Sciences Graduate Research Program, Faculty of Arts,
Monash University, Australia*

ABSTRACT

This paper explores the sociocultural, economic, and political factors influencing vulnerability and responses to flood hazards in two informal settlements along the banks of Korle Lagoon near the Central Business District (CBD) of Accra, Ghana. Using mixed methods, the paper reveals that flood vulnerability constructs and responses are shaped by the legitimacy and recognition of the communities by city authorities, and presence and voices of local and international political actors. The paper therefore recommends a rethinking of the urban planning process that places emphasis on the security of tenure, at the expense of participatory urban governance and rights to urban citizenship.

INTRODUCTION

This paper investigates the contexts and politics of flood vulnerabilities in informal communities in African cities. Situated within three conceptual contexts of urban informality, vulnerability, and the role of the state in urban governance, the paper explores the sociocultural, economic, and political factors influencing vulnerability to flood hazards in the two informal settlements of Agbogbloshie and Old Fadama, located along the banks of Korle Lagoon near the Central Business District (CBD) of Accra, Ghana.

INFORMAL URBANIZATION, VULNERABILITY, AND THE ROLE OF THE STATE IN THE GLOBAL SOUTH

Alsayyad (2004, 28) notes that “urban informality” was first used in the work of Juan Pablo Pérez Sainz in the late 1980s to represent the urban informal economy in terms of employment structure. However, an initial concept and idea of informality was presented by Hart (1973) when he distinguished between the informal and formal sectors and their “legitimacies” and “illegitimacies” in the postcolonial emerging urban economy of Accra, Ghana. In terms of definition, Porter (2011, 115) combines the definition of the informal settlement and sector as “modes of human settlement and trade or exchange that occur outside of formal legal structures and processes” and posits that such urban spaces are studied as “slums” or “squatter” settlements in the global south in urban settlement terms and as street economic activities in economic terms. For the purpose of this study “urban informality” represents the totality of the manifestations of processes, activities, and networks at play within the urban space without the direct sanction of state authority. Dovey and Raharjo (2010) have stated that the phenomenon is and will continue to be a key part of urbanization in the global south in the 21st century.

Vulnerability on the other hand is explained in many cases as a function of the exposure of a system and its susceptibility to a specific set of exogenous biophysical, social, economic, or political threats or risks. A typical definition that can be given under this study is borrowed from Wisner et al. (2004, 11), who frame vulnerability as the “characteristics of a person, a group [or place] in terms of their capacity to anticipate, cope with, resist and recover from the impact of a natural disaster” and is measured by the actual outcome of the hazard, such as lives lost, property damaged, and in the case of flooding, areas flooded or affected. According to Haalboom and Natcher (2013) vulnerability of an individual or community can be understood at three levels. First is the exposure of the community or individual to the perceived or actual hazard, which can be social, economic, physical, or environmental. Second, vulnerability also depends on the community’s sensitivity to the perceived or actual hazard, which is usually predetermined by its social, economic, and political conditions. The third is the community’s or individual’s ability to plan for, respond or adapt to the hazard, referred to as “adaptive capacity” by Smit and Wandel (2006).

The role of the state and urban governance in the production and shaping of urban informality and vulnerability to flood hazards has been discussed in the literature in a number of ways (Westgate 1981; Laquian 2005). Westgate (1981, 28) described the state's attitude towards informal settlements, squatters, and slum dwellers as ranging from "blind intolerance to blatant hostility." As a result, many city officials in the global south have treated these informal communities as "cancerous growth[s] on the city" (Laquian 2005, 353) to be removed, covered up, or totally neglected. Therefore it has been argued that the state produces and shapes urban informality and vulnerability through its brutal presence in demolishing informal settlements or convenient absence through the lack of planning and provision of infrastructure.

The other way in which the state produces and shapes urban informality and vulnerability is by ignoring their processes of evolution, existence, and development within the urban area and dealing with only the formal sector of the urban planning system (De Soto 1989). Thus these informal settlements are allowed to grow by themselves in the most hazardous areas in cities of the global south "not deemed appropriate for human habitation" (UN Habitat 2003, 69). Informal communities are therefore often located on flood plains; steep slopes prone to subsidence, landslides, and mudslides; wetlands; and unused state lands close to major transport terminals or networks (Gencer 2013) usually with deplorable housing conditions and without the provision of basic urban infrastructure such as water, sanitation, storm water drainage systems, and electricity (Laquian 2005; Westgate 1979). This neglect by city authorities deepens the growing urban poverty, inequalities, deprivation, and marginalization in the urban south (Watson 2009a, b). These are sometimes exacerbated by their reduced response and adaptive capacities, insecurity of land tenure, limited livelihood opportunities, and other forms of marginalization (Gencer 2013, 14–15).

Squatters, slum dwellers, and residents of informal communities have resisted such hostilities and neglect by the state—often through violent confrontation and sometimes through various alliances, and the formation of groups and collective political agencies (Laquian 2005). In other cases slum dwellers have drawn on the support of external agencies such as community based organizations, international non-governmental organizations (NGOs), and other donor agencies to claim legitimate urban

citizenship and to make their voices heard (Grant 2009; Lindell 2010). Thus, contrary to the “official view” that informal settlements are “chaotic and ungovernable,” there appear to be robust and well-connected social and political network systems within the urban informal communities and beyond on which they have built their adaptive capacities and response mechanisms (De Soto 1989).

From the foregoing discussions, the growth and expansion of informal communities on hazardous locations and the hostility or neglect of the urban governance system influence their exposure and susceptibility to flood and other hazards on one hand, while they build implicit capacities to respond, and develop coping mechanisms and resilience on the other. As a result, the three conceptual pillars of urban informality, vulnerability, and the role of the state and urban governance in cities of the global south provide conceptual contexts within which I investigate the politics of vulnerability and responses to flood hazards in urban informal communities in Accra, Ghana.

DATA AND METHODS

Forty officials of eighteen institutions were interviewed. Eleven institutions related to urban environmental management and flooding had been selected before my visit to Accra, Ghana; seven others were selected and interviewed based on snowball sampling resulting from my interviews with the preselected institutions and interactions within the study communities. The selection of officers was determined by their functional and operational knowledge of the issues under investigation.

Interviews of the selected officials revealed a number of government policy documents relevant to the study. The relevant documents were reviewed as part of the field data collected for the study. Most of them provided explanations of the determinants of institutional responses to flood hazards in Accra, especially institutional attitude and posture or inertia towards informal settlements in the city.

Two informal communities, Agbogbloshie and Old Fadama, located along the banks of the Odaw River and Korle Lagoon were selected for the study (see Figure 1). The selection of the two communities resulted from a purposive sampling from the list of flood-prone informal communities in

Accra obtained from Ghana's National Disaster Management Organization (NADMO) and Water Research Institute (WRI). Community consultations were conducted through focus group discussions, mini workshops, hazard victims' interviews, field observations, and informal interactions.

ACCRA IN THE STUDY'S CONTEXT

Accra is the capital of and largest city in Ghana. The city covers about 300 square kilometers of land (Grant and Yankson 2003; Rain et al. 2011) and has grown from an initial population of 190,000 at Ghana's independence in 1957 to a current estimated population of 3.3 million (Grant and Yankson 2003). Like many cities in sub-Saharan Africa, Accra is experiencing a rapid rate of informal urbanization with a population growth rate of 4.3% per annum and four out of every ten residents in the city living in slums, or squatter or informal settlements. The current rate of informal urbanization and the low-lying nature of the city, coupled with the development of informal settlements in flood plains and hazardous wetland areas, expose the city and its residents to perennial flood hazards (Karley 2009).

INFORMALITY CONTEXTS OF AGBOGBLOSHIE AND OLD FADAMA

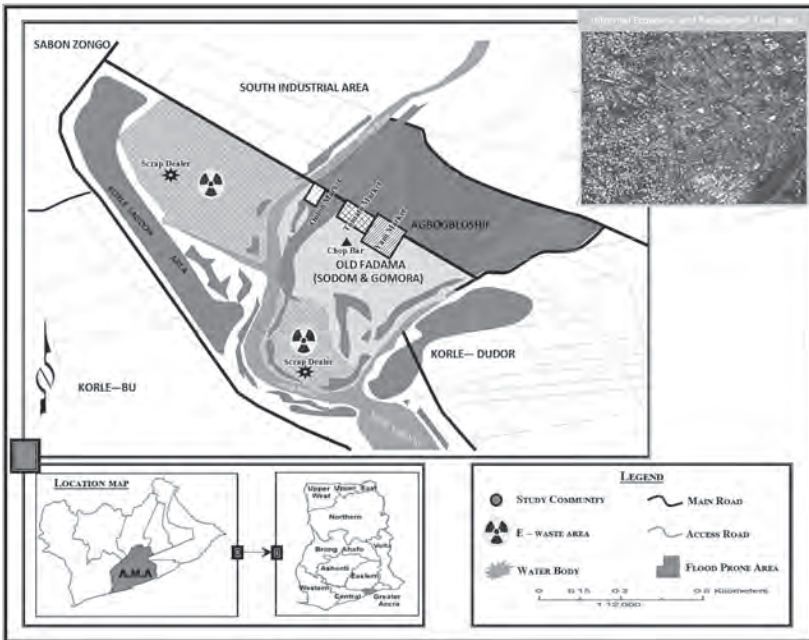
Agbogbloshie and Old Fadama communities are currently populated mainly by second- to third-generation native Ga Dangmes, and a greater proportion of migrants, mainly from the northern parts of Ghana. As heterogeneous communities, Agbogbloshie and Old Fadama have been described as a microcosm of Accra's socioeconomic structure (COHRE 2004).

Agbogbloshie community dates back to the period before the 1930s when it was a part of the first "native town"¹ in the colonial capital of Accra under the then British colonial administration (Grant and Yankson 2003). The community evolved as a small Ga² village. The first inhabitants were believed to have moved from the cluster of coastal Ga communities around

1 During the colonial era, this was the area of indigenous settlements where local people lived

2 The ethnic name given to natives and indigenes of Accra.

Figure 1: Map of Study Communities



Ga Mashie³ area, which is known to have started Accra in order to trade with the early European merchants. As a native town in the colonial era, the area was adjacent to a well-structured and planned European suburb and CBD, which doubled as the head offices of the colonial administration and headquarters of the few foreign companies that had started operating in then Gold Coast (now Ghana). Though the native town area shared boundaries with the European parts of the city, it received no land use planning (Grant 2006).

3 The cluster of Ga communities believed to be where the city of Accra started in 1877 after the British colonial government relocated the capital of the then Gold Coast (now Ghana) from Cape Coast to Accra, the current capital of Ghana.

The lack of urban planning coupled with rapid influx of local and rural migrants to stay and do business in the area marked the beginning of the native town that has now turned into Agboghloshie. According to Grant and Yankson (2003, 67), the colonial government's neglect of urban planning in the area "led to a crowded, cluttered and congested environment with poor structures and unhealthy conditions." Thus Agboghloshie was originally a formal indigenous Ga settlement under customary land administration, but developed gradually into a slum community surrounded by several informal residential and commercial developments.

Officials of the Accra Metropolitan Assembly (AMA) interviewed indicated that "illegal spillover" developments from Agboghloshie gave rise to Old Fadama in the early 1980s. Old Fadama is a squatter settlement located on state land acquired compulsorily by the Government of Ghana in 1961 for what it claimed to be the "Korle Lagoon Development" project (Grant 2006). The project was abandoned after the overthrow of the first Ghanaian government in 1966 through a bloody coup d'état. Disrespectfully called "Sodom and Gomorrah" by a section of the Ghanaian media, Old Fadama community was first settled in 1981 by new rural-urban migrants most of whom were from northern Ghana (Farouk and Owusu 2012). According to officials interviewed at the AMA, the initial settlers were ignored by city authorities under the pretext that the settlements "were temporary and that they will go away due to the lack of basic household infrastructure and services." Again, an official interviewed at the Town and Country Planning Department (TCPD) also mentioned the influx of "Ghanaian returnees deported from Nigeria in the early 1980s, specifically, between 1981 and 1983" as among the first to have settled at Old Fadama "with the knowledge of the then military government." The official neglect of the new informal settlement led to its continuous growth till 1990.

The 1990s saw the rapid growth of the area. In 1991, as part of the Ghanaian government's urban development program to decongest Accra and clear it of street hawkers in order to prepare the city for the Non-aligned Movement Conference (NAM Conference), it officially, though assumed to be temporarily, relocated most hawkers and petty traders in the streets of Accra to Old Fadama. This, according to an official of the TCPD head office in Accra, marked "what appears like the first official endorsement of the otherwise illegal settlement."

From the interviews with AMA officials, in the assembly's separate exercise in 1993, it also relocated a yam market at the edge of Old Fadama on its northern boundaries with Agbogbloshie (see Figure 1). Due to its labor-intensive nature, this yam market also expanded the population and housing densities of the area. Again, 1993 saw the emergence of a metal and electronic waste hub, where spoilt second-hand refrigerators and computers imported from Europe and the USA are fabricated into household utensils for cooking and other metal tools. The e-waste market has since grown into an important scrap and fabrication market in the West African sub-region receiving approximately 15% of all e-waste shipped into Africa from Europe and North America (Boateng 2011). These developments have also been described by the local leaders interviewed as the second open endorsement of the informal settlement of Old Fadama by the authorities. One AMA official interviewed refuted this assertion, stating that it was a "temporary measure and that cannot be seen as an endorsement."

In 1994, the Agbogbloshie and Old Fadama area received yet another major population influx when the Interior Ministry of the Ghanaian government relocated to the area displaced migrants fleeing from the Konkomba-Nanumba-Dagomba⁴ war in northern Ghana. These "ethnic-conflict displaced" migrants were moved to Accra as a way of protecting them from the devastating impacts of the war. Most of these mainly young women and some men from the conflict zones ended up in the yam market at Agbogbloshie and Old Fadama area due to the relatively large numbers of their people residing in the community. The coming in of these migrants from the conflict areas and their acceptance in the community without any official rejection has also been seen by the People's Dialogue on Human Settlements as the third key endorsement of the illegal occupation of the area (Farouk and Owusu 2012). The population and housing densities of the two communities have grown rapidly over the years mainly due to rural-urban migration.

In recent years since the 2000s, the growth of the two communities has been mainly due to their economic opportunities as well as to the affordable low-income housing provided by Agbogbloshie and Old Fadama to new migrants into Accra. As a result, the area consistently received many

⁴ A bloody ethnic war among the Konkomba, Nanumba, and Dagomba tribes, also known as "the Guinea Fowl war" (see Farouk and Owusu 2012, 47).

migrants in search of better social and economic opportunities. Some of the officials interviewed even associated the rapid growth of the area in the 2000s to “Ghana’s two times hosting of the African Nations’ Soccer Tournaments in 2000 and 2008” and the economic opportunities they provided for migrants both from within Ghana and other parts of Africa, particularly West Africa. The rapid population growth and expansion of informal/unapproved developments has led to agitation by a section of the Ghanaian media for the demolition and forced eviction of the community from its present location (Grant 2006).

Because the two settlements are contiguous they have been considered as one large slum area vulnerable to flood hazards and the main source of pollution into the Odaw River and Korle Lagoon, along which banks they are located. Successive governments have since tried to complete the proposed Korle Lagoon Ecological Restoration Project (KLERP) without success. State and city authorities consider the continuous location of the two communities in that area as the main hindrance to the successful completion of the proposed project. Internally, residents of the two communities want to be seen as separate with entirely different security of tenure and legitimacy. But the city authorities consider them both equally as a nuisance that must be removed through “eviction, relocation, or redevelopment”⁵ to allow the proposed project to continue. They also argue that the location of the two informal settlements on flood plains along the Korle Lagoon is the main cause of flood vulnerability in the area and hence the case for their eviction.

Exposure of the communities to flood risks/hazards is, on one hand, used as the reason for threats of forced evictions or redevelopment and, on the other, seen as the main cause of vulnerability by residents. Again, this subsection sets the contexts of the two types of urban informality around the Korle Lagoon. First, the indigenous Ga community of Agbogbloshie is officially recognized by the state under the traditional land system, with some land-use plan of a sort, but it has gradually developed into a slum owing to the rapid population and housing growth without development regulations coupled with the neglect of the state. Old Fadama, located on state acquired land, is occupied mainly by migrants from northern Ghana and seen as “illegal” by both the traditional landowners and state institutions and hence

5 Interview with the Accra Metropolitan Town Planning Director, Ms Doris Tettey, June 2013.

is threatened constantly with forced evictions (Grant 2006; Afenah 2009; Farouk and Owusu 2012).

FLOOD VULNERABILITY AND IMPACTS

Both residents and officials interviewed associated the occurrence of flood hazards in the two communities with heavy and sometimes extreme precipitation within the May-July rainfall season, the perennial overflow of the Korle-Odaw basin, and the occasional storm surges at the estuary between the Korle Lagoon and Atlantic Ocean. While the occurrence of flood events in Agbogbloshie and Old Fadama has been associated with biophysical hazards, human vulnerability to floods has been associated with preexisting/on-going living conditions and sociopolitical processes within the communities.

Flooding and flood hazards have been seen as yearly occurrences in the both Agbogbloshie and Old Fadama since the mid-1980s. However, participants' perceptions exhibit wide internal variations in the trends, causes, and impacts of flood hazards. For example, respondents in Agbogbloshie indicated a gradual reduction of flood hazards since 1996 owing to the construction of a major storm drain in their community to channel runoff into the Korle Lagoon, while participants in Old Fadama indicated an increase in the devastation and impacts of flood hazards. The difference in impacts is generally perceived by residents of the two communities to have resulted from the official view that Agbogbloshie is a "legitimate settlement"⁶ while the Old Fadama area is a "squatter settlement."⁷ As a result, the latter does not have the approval of the Accra metropolitan planning authorities, and hence is denied the provision of

6 The legitimacy of Agbogbloshie is explained by the security of tenure of its residents under the indigenous/customary land administration and not necessarily officially approved physical development. Thus Agbogbloshie, though not well planned and with informal residential developments, has the legitimacy of the customary landowners under the plural land administration system in Ghana also recognized by the city authorities and therefore entitled to infrastructure provision.

7 Old Fadama is perceived/believed to be located on the government's compulsorily acquired land that was not used for its intended purpose and hence is illegal and should not be provided with household utility services.

municipal infrastructure. Thus residents of Old Fadama depend on private individuals and vendors for their daily supply of water and sanitation needs. Apart from the exorbitant prices at which these facilities are provided, the sources of drinking water are contaminated, and sanitation services are highly inadequate. For example there are currently no household toilets in Old Fadama and all residents rely exclusively on public latrines, which raises dire public health issues during and after flood events. These public facilities have been built through community self-help and support from local and international NGOs.

Another reason given by community participants for the increasing flood events and impacts at Old Fadama is the generally low elevation of the area and residential developments on land reclaimed from the Korle Lagoon using “sawdust” and other materials such as plastic bags and cardboard or plywood. In addition to the reclamation of wetlands along the Korle Lagoon, haphazard housing, made mainly from wood, plywood, and aluminium/iron roofing sheets, makes the community increasingly vulnerable to flood risks and hazards. Community members interviewed recalled and reported three major flood events between 1986 and 1999, seven between 2000 and 2010.

Again, there were three reported major flood events between 2011 and 2013 in the study communities that occurred in October 2011, and May and June 2013. The October 2011 flood is considered the worst in the recent past, by both residents of the communities and the National Disaster Management Organization (NADMO). According to respondents in both communities, on the night of the 25th to the early hours of 26th, long hours of heavy downpour resulted in a devastating flood. The Ghana Meteorological Agency (GMET) estimated a six-hour rainfall at more than 100mm. Official reports from NADMO estimate that 43,000 people were affected by the event, 17,000 households lost their homes, and 14 people lost their lives in the Accra metropolis. According to leaders interviewed in both communities, over 25,000 of the people affected were residents of Agbogbloshie and Old Fadama along the Odaw River and the Korle Lagoon. The last two floods occurred while I was in Accra, for my field-work, so some victims of the two incidences were selected and interviewed as part of the community consultations for this study.

In both study communities, respondents identified tangible and intangible flood impacts. The main tangible impacts identified were the destruction

of housing structures usually used for both residential and small-scale commercial activities, destruction of community-level infrastructure, and the outbreak of diseases such as malaria, cholera, typhoid, and skin diseases. The intangible and indirect flood impacts that were identified by respondents included threats of evictions from city authorities, displacement of families, and loss of community identity and social capital. All these impacts are interrelated and affect different sections and categories of residents. However, the most critical and sensitive of these issues is the city authorities' use of the annual flooding as a justification to eject residents of Old Fadama and parts of Agboglobshie. Although the city authorities see the occupation both as illegal and a contributing factor to the perennial flooding of the area, residents of Old Fadama and the affected parts of Agboglobshie maintain their legality and demand that they be treated better than marginalized urban dwellers.

ROLE OF THE STATE—URBAN PLANNING AND TRADITIONAL LAND OWNERSHIP

The presence of the state in shaping Agboglobshie, then a native town, was first felt through compulsory acquisition of lands by the colonial administration around Agboglobshie for various public, industrial, and commercial uses in the 1930s (Grant and Yankson 2003, 66–67). Participants voiced concerns about the compulsory acquisition of their lands by successive governments for the construction of railway lines, three big markets, an industrial hub, a tourism area, and buffer zones to protect the ecological sanctity of the Korle Lagoon. Community members blame their hazardous and marginal location partly on the compulsory acquisition of land around their community. As a result, concerns have been raised by indigenous traditional authorities about inadequate policies and regulations as well as the lack of enforcement of the state's definition of land size adequate for public use, unused compulsorily acquired lands for some of which appropriate compensations have not been paid, third-party encroachments on such lands owing to long periods of fallow, and even outright sale of such lands to private individuals for purposes entirely different from the original motive for acquisition (Kassanga and Kotey 2001). The coexistence of complex and overlapping traditional, state, and private land ownership and

planning systems gave rise to Old Fadama, which is located on state acquired land that was not used for the intended purpose. Old Fadama community is therefore found within a political framework that has pitched the state against the current residents and the original/traditional landowners.

The next significant state involvement in shaping vulnerability in the Agboglobloshie and Old Fadama area is when, in the 1960s, the Government of Ghana became directly involved in the development of the Korle Lagoon, leading to the nullification of all existing traditional/indigenous interests and rights to the land and natural resources in the area, due to the proposed Korle Lagoon Ecological Restoration project (Grant 2006, 9). The project could not proceed as planned; some of the lands so acquired were subsequently given out for industrial development, but the area now known as Old Fadama was left unused (Afenah 2009). The rapid encroachment and expansion of the area that followed exposed it to flooding from the Odaw River and Korle Lagoon.

Renewed efforts by the Ghana government to restore the heavily silted and dying Korle Lagoon to its original ecological status started in the 1990s after the failed attempt in the 1960s. Funding for the first phase of the project was secured in 1999. The rejuvenated Korle Lagoon Ecological Restoration Project (KLERP), which started in March 2000, was to: “Restore the lagoon to its natural ecology and realign the lagoon to improve its hydrological efficiency to increase the flow of the water through the lagoon, and finally to develop it into a major tourist attraction” (Boadi and Kuitunen 2002, 308).

In May 2002, the AMA served an eviction notice to the residents of some sections of Agboglobloshie and Old Fadama settlements to make way for the KLERP. One Issah Iddi, an opinion leader, and ten others, with the support of the Ghanaian division of the Centre for Public Interest Law (CEPIL), applied for an injunction to stop the eviction, which was rejected by the Accra High Court on 24 July 2002 (Grant 2006). Despite the ruling, once again the continuation of the project fell through due to inability of the city government to forcefully evict residents of the area, pay compensations, and deal with sometimes fierce resistance backed by a number of strong and vibrant community-based movements, pressure groups, and civil society organizations (Afenah 2009).

The sudden presence of the state was felt again in 2003 when the government changed the name of the Ministry of Tourism to the Ministry of

Tourism and Modernization of the Capital City, which had as one of its main mandates to clean Accra for tourism and get rid of all illegal development activities. The new ministry proposed to clear the area in September of 2004 for the continuation and completion of the proposed KLERP that, according to the government, had been stalled due to the “illegal” occupation by the residents of parts of Agbogbloshie and Old Fadama. However no significant work has been done on the KLERP since 2005 except for intermittent dredging of sections of the lagoon after major flood events.

The continuous local political debate as to who owns the land and has the most authentic legal title/interests, as well as the subtle but consistent intention of city authorities to forcefully evict residents of the area, the allegations of crimes, political tensions hyped by local media, and residents’ resistance to forced evictions by city authorities appear to overshadow the communities’ vulnerability to flood hazards. This vulnerability becomes a topical issue only during the rainy seasons and/or national political campaign seasons. As a result the politics over land in the area has been in deep contention among three major stakeholders: Government of Ghana and its institutions, such as the AMA, the Environmental Protection Agency (EPA), and the TCPD; the traditional authorities—the Gbese and Korle Stools; and residents/settlers supported by community-based and international NGOs.

According to Grant (2006), the above discussions present three major issues for the sociopolitical framework of Agbogbloshie and Old Fadama. The first debate focuses on the delineation and relationships between the two settlements as regards legal rights to the land and illegal occupancy. Second, the continuous occupancy of residents of Old Fadama and protection and completion of the proposed KLERP has also come up for discussions by relevant stakeholders. And third, the position of the traditional authorities whose intention is to take back the land from the Government of Ghana, since it was not used for the original acquisition purpose. These complex and delicate social and political processes, claims and counterclaims over land ownership rights, and threats of evictions and community resistance in the face of perennial heavy rainfall and overflow of the lagoon set the contexts of flood vulnerability in the Agbogbloshie/Old Fadama area.

CONCLUSION

Although flood events are associated with geophysical occurrences such as rainfall, overflow of river basins, and high tides, flood vulnerability in informal communities in Accra are produced and shaped by complex socio-cultural and political processes and alliances in constant interaction within the urban environment. For instance the study revealed that the growth processes, land ownership structure, security of tenure, and the presence or absence of state/city government institutions have played important roles in the exposure and vulnerability of Agbogbloshie and Old Fadama to perennial flood events in Accra. On the flip side of these factors of community flood vulnerability is a growing complex of community collective agencies and resilience evolving from their social and political alliances with local and international stakeholders and actors.

From the foregoing, an important entry point in addressing flood vulnerability in informal communities in Accra should be a reconsideration of the current structure and processes of urban governance, state-community engagements, urban citizenship, and the right to the city in these communities. This can be done through rethinking the overall urban planning and development processes that place great emphasis on the security of tenure at the expense of land management and participatory urban governance, housing provision, access to infrastructure, and the right to urban citizenship.

REFERENCES

- Afenah, Afa. 2009. "Conceptualizing the Effects of Neoliberal Urban Policies on Housing Rights: An Analysis of the Attempted Unlawful Forced Eviction of an Informal Settlement in Accra, Ghana." DPU Working Paper.
- Alsayyad, Nezar. 2004. "Urban Informality as a "New" Way of Life." In *Urban Informality: Transitional Perspectives from the Middle East, Latin America and South Asia*, by Ananya Roy and Nezar Alsayyad, 7–30. Oxford: Lexington Books.
- Boadi, Kwasi, and Markku Kuitunen. 2002. "Urban Waste Pollution in the Korle Lagoon, Accra, Ghana." *The Environmentalist* 22 (4): 301–09.
- Boateng, Osei. 2011. "Ghana Burns Itself Away." *New African* (Proquest), No. 506: 62–65.
- Center on Housing Rights and Evictions (COHRE). 2004. *A Precarious Future: The Informal Settlement of Agbogbloshie, Accra, Ghana*. Consultancy Report. Accra: COHRE.

- De Soto, Hernando. 1989. *The Other Path*. London: I.B. Tauris & Co Ltd.
- Dovey, Kim, and Wiryo Raharjo. 2010. "Becoming Prosperous." In *Becoming Places*, by Kim Dovey. London: Routledge.
- Farouk, Braimah R, and Mensah Owusu. 2012. "If in Doubt, Count: The Role of Community-Driven Enumerations in Blocking Eviction in Old Fadama, Accra." *Environment and Urbanization* 24 (1): 45–57.
- Gencer, Ebru A. 2013. *The Interplay Between Urban Development, Vulnerability, and Risk Management*. New York: Springer.
- Grant, Richard. 2009. *Globalizing City—The Urban and Economic Transformation of Accra*. New York: Syracuse University Press.
- Grant, Richard. 2006. "Out of Place? Global Citizens in Local Places: A Study of Informal Settlements in the Korle Lagoon Environs in Accra, Ghana." *Urban Forum* 17 (1): 1–24.
- Grant, Richard, and Paul Yankson. 2003. "City Profile: Accra." *Cities* 3 (1): 17–29.
- Haalboom, Bethany, and David Natcher. "The Power and Peril of 'Vulnerability': Lending a Cautious Eye to Community Labels." In *Reclaiming Indigenous Planning*, by Ryan Walker, Ted Jojola, and David Natcher. Montreal-Kingston: McGill-Queen's University Press.
- Hart, Keith. 1973. "Informal Income Opportunities and Urban Employment in Ghana." *Journal of Modern African Studies* (Cambridge Journals) 11 (1): 61–89.
- Karley, Noah K. 2009. "Flooding and Physical Planning in Urban Areas in West Africa: Situational Analysis of Accra, Ghana." *Theoretical and Empirical Researches in Urban Management* 13 (4): 25–41.
- Kassanga, Kasim, and Kotey Nii Ashie. 2011. *Land Management in Ghana: Building on Tradition and Modernity*. London: James Mayers /IIED.
- Kuitunen, Markku, and Kwasi Owusu Boadi. 2002. "Urban Waste Pollution in the Korle Lagoon, Accra, Ghana." *The Environmentalist* 22 (4): 301–09.
- Laquian, Aprodicio A. *Beyond Metropolis: The Planning and Governance of Asia's Mega-Urban Regions*. 2005. Baltimore; Washington, DC: Woodrow Wilson Centre Press/The Johns Hopkins University Press.
- Lindel, Ilda. 2010. "Between Exit and Voice: Informality and the Spaces of Popular Agency." *African Studies Quarterly* 11 (2, 3): 1–11.
- Oteng-Ababio, Martin. 2012. "Electronic Waste Management in Ghana-Issues and Practices." In *Sustainable Development : Authoritative and Leading Edge Content for Environmental Management*, 149–66. DOI 10.5772/2562:INTECH
- Porter, Libby. 2011. "Informality, the Commons and the Paradoxes for Planning: Concepts and Debates for Informality and Planning." *Planning Theory and Practice* 12 (1): 115–25.
- Rain, David, Ryan Engstrom, Christianna Ludlow, and Sarah Antos. 2011. "Accra Ghana: A City Vulnerable to Flooding and Drought-Induced Migration. Case study prepared for Cities and Climate Change." *Global Report on Human Settlements*. <http://www.unhabitat.org/grhs/2011>.
- Smit, Barry, and Johanna Wandel. 2006/ "Adaptation, Adaptive Capacity and Vulnerability." *Global Environmental Change* 16:282–92.
- United Nations Human Settlements Programme (UN Habitat). 2003. *The Challenge of Slums: Global Report on Human Settlements*. London and Sterling: Earthscan Publication Ltd.
- Watson, Vanessa. 2009a. "'The planned city sweeps the poor away...': Urban Planning and 21st Century Urbanisation." *Progress in Planning* 72:151–93.

- Watson, Vanessa. 2009b. "Seeing from the South: Refocusing Urban Planning on the Globe's Central Urban Issues." *Urban Studies* 46 (11):259–27.
- Westgate, Ken. 1981. "Land-Use Planning, Vulnerability and the Low-Income Dwelling." In *Disasters and the Small Dwelling*, by Davis Ian, 27–31. Oxford: Pergamon Press.
- Westgate, Ken. 1979. "Guest Editorial." *Disasters* 3 (3): 239–41.
- Wisner, Ben, Piers Blackie, Terry Cannon, and Ian Davis. 2004. *At Risk: Natural Hazards, People's Vulnerability and Disaster*. New York: Routledge.

Building Resilience through Housing Reconstruction in Areas Affected by Typhoon Haiyan¹ in the Philippines: Users Involvement and Incremental Growth for Medium-rise Buildings

Ivette Arroyo

Housing Development and Management, Lund University

ABSTRACT

The paper discusses how families affected by Typhoon Haiyan have been involved in housing reconstruction in the Philippines and the potential for the use of medium-rise buildings. Case study methodology was conducted based on data collected three months after Typhoon Haiyan. Reconstruction projects show different degrees of users involvement such as “reparation of previous makeshift shelter,” “shelter as humanitarian assistance,” “expanding people’s opportunities to rebuild,” “users as unskilled labor,” and finally “enhancing users self-construction and self-management capabilities.” “Freedom to rebuild,” a capability approach framework to evaluate users involvement and resilience in postdisaster housing reconstruction, has been developed and applied to a project in Ormoc, Leyte.

1 Super typhoon Haiyan or Yolanda has been the strongest storm ever recorded, wind speeds higher than 300 km/hour and storm surge –five meter tsunami like waves. It hit the Philippines heavily on November 8, 2013 (National Economic and Development Authority 2013).

INTRODUCTION

Typhoon Haiyan has raised international concern about how calamities affect both the poor and the wealthy and the need for all citizens to become more resilient. Haiyan destroyed many poorly built settlements but also affected buildings designed according to the National Building Code of the Philippines. The scale of damage calls for a housing reconstruction policy that builds on the resources and capacities of affected people. More than seventy organizations are implementing reconstruction projects. The paper analyses how affected families have been involved in housing reconstruction processes and discusses the incremental growth of housing in medium-rise buildings. The main research method is an explanatory case study based on empirical data obtained three months after Typhoon Haiyan. A capability approach framework to evaluate users involvement and resilience in postdisaster housing reconstruction has been developed to overcome limitations related to the scope of this work while providing communities with a tool for early stage evaluation.

THEORETICAL FRAMEWORK

Disaster, development, and reconstruction approaches

Collins (2009, 89) argues that “development problems provoke disasters and disasters slow up development.” Underdevelopment increases vulnerability to disaster, defined as social and economic susceptibility created by poverty (Collins 2009), whose root causes influence people’s ability to cope with and recover from disasters (Joakim 2013). Reconstruction approaches vary according to different degrees of users involvement and control over the housing process from owner- or community-driven approaches to agency-

driven reconstruction² (Jha et al. 2010). Table 1 summarizes advantages and disadvantages of five reconstruction approaches and provides examples from different countries. The experience of the last two decades of post-disaster reconstruction seems to support owner-driven and community-driven reconstruction approaches because the construction quality achieved has been shown to be better than agency-driven reconstruction.

Building back better from a capability approach perspective

Schilderman and Lyons (2011) argue that building back better is mainly interpreted as building safer and stronger houses, which leads to agency-driven reconstruction without involving affected communities. The authors contend that the reduction of people's vulnerabilities should be based on strengthening their capabilities to cope better with hazards, which implies decision making and resource management roles. Furthermore, they conclude that Turner's theory on how the housing process empowers people is essential to reconstruction because it strengthens their capabilities and resilience (Schilderman and Lyons 2011).

Sen's capability approach emphasizes the need for "the expansion of the 'capabilities' of persons to lead the kind of lives they value—and have reason to value" (Sen 1999, 18). Capabilities refer to the opportunity set or the freedoms available to people to achieve the lifestyle they value (Frediani 2010). Capabilities go beyond the concept of capacity—enhancing skills and abilities—because capabilities include the dimensions of choice and opportunity (Frediani 2007). According to Sen (1999), "a person's 'capability' refers to the alternative combinations of functionings that are feasible for her to achieve (Sen 1999, 75)." Sen's concept of functionings "reflects the various things a person may value doing or being (Sen 1999, 75)."

2 Definitions of five approaches to reconstruction:

- "Cash approach: unconditional financial assistance is given without technical support.
- Owner-driven reconstruction: conditional financial assistance is given, accompanied by regulations and technical support aimed at ensuring that houses are built back better.
- Community-driven reconstruction: financial and/or material assistance is channelled through community organizations that are actively involved in decision making and in managing reconstruction.
- Agency-driven reconstruction in-situ: a governmental or nongovernmental agency hires a construction company to replace damaged houses in their pre-disaster location.
- Agency-driven reconstruction in relocated site: governmental or nongovernmental agency hires a construction company to build new houses in a new sites" (Jha, et al. 2010, 93).

Table 1. Advantages and disadvantages of different reconstruction approaches for postdisaster reconstruction and examples of their application

Reconstruction Approaches	Advantages	Disadvantages	Examples and references
The Cash Approach (CA)	Most cost effective, rapid delivery of aid to households. Simple delivery mechanisms	Without technical assistance CA might reproduce predisaster vulnerabilities; no improvement in building skills	Cash for Repair and Reconstruction (CfRR) after 2004 tsunami in Sri Lanka (see Belgian Red Cross 2009; Aysan et al. 2007)
Owner-Driven Reconstruction (ODR)	Most empowering and dignified approach for households. Speeds up recovery; technical assistance is key and adjusts to household needs. Viable for houses or medium-rise buildings.	Poor standards and poor technical assistance can lead to poor construction quality. Too rigid building codes or alien housing technologies increase difficulty for households to self-build or have oversight.	ODR Housing Reconstruction and Retrofitting after 2005 North Pakistan Earthquake (see Aysan et al. 2007)
Community-Driven Reconstruction (CDR)	Fast approach, houses respond better to family needs; process fosters community cohesion. Combines financial assistance, technical assistance, subsidized construction materials, organized self-help reconstruction or self-management of labor.	The application of local building technologies may be constrained by inadequate building capacity.	CDR following the 2001 earthquake in Gujarat, India (see Dwayne Barenstein 2010); and CDR in relocated site after 1998 Hurricane Mitch in Nicaragua (see Aysan et al. 2007)
Agency-Driven Reconstruction in Situ (ADRSIS)	No land acquisition required, communities are not displaced. It can introduce new building technologies	In Tamil Nadu: agencies demolishing houses built by other agencies, fishing communities' house culture was not considered in designing new houses. Lack of possibilities for expansion, and poor construction quality due to lack of supervision and control over profit-oriented contractors	ADRSIS in Tamil Nadu after the tsunami in 2004 (see Dwayne Barenstein 2010; Jha et al. 2010)
Agency-Driven Reconstruction in Relocated Site (ADRRS)	Appropriate where predisaster settlements are located in hazardous sites; may be faster and cost effective; appropriate for dense urban settlements and complex building technologies	In Maharashtra: poor construction quality, inappropriateness of construction materials to climatic conditions, techniques that complicate maintenance, which have resulted in houses being gradually abandoned	ADRRS in Maharashtra implemented after the earthquake in 1993 (see Dwayne Barenstein 2010; Jha et al. 2010)

Source: Elaborated by the author based on Jha et al. (2010) with examples from Aysan et al. (2007); Belgian Red Cross (2009); and Dwayne Barenstein (2010).

Policies for poverty alleviation should expand the opportunities of the poor to achieve the goals or things they value (Frediani 2007). Thus, applying the capability approach to postdisaster reconstruction policy implies expanding people's opportunities and choices to rebuild in a way to achieve the lifestyle they value. This argument will be further elaborated below.

Resilience is “the ability of a system, community, or society exposed to hazards to resist, absorb, accommodate to, and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions.” (UNISDR 2009, 24). Joakim (2013) argues the need to link vulnerability and resilience while recognizing people's capacity in disaster recovery frameworks. The vulnerability perspective provides insights into the socio-political, economic, and cultural factors that increase disaster risks; whereas the resilience perspective “explores the opportunities for moving forward and reducing the impact of hazards in the post-disaster period” (ibid., 40). Finally, resilience is empowering because it recognizes that people have capacities and resources to actively participate in the recovery process. In this study, *capacity* is replaced with *capability* to include the dimensions of opportunity and choice, as discussed earlier in this section. Enhancing people's capabilities to rebuild in the way they value—through expanding people's opportunities, choices, and capacities—strengthens their collective efficacy³ to counteract the root causes of their vulnerability and enhances their adaptive capacity, which leads to more resilient communities.

BACKGROUND: THE IMPACT OF HAIYAN AND EMERGENCY RESPONSE

It has been estimated that 490,000 houses were destroyed and 520,000 houses damaged by Haiyan. Tarpaulins and tents were delivered to 570,000 people; corrugated iron sheeting, fixings, and tools were provided to 133,000 households; and 80,000 houses were completely repaired or re-

3 Collective efficacy: “People's shared beliefs in their collective power to produce desired outcomes is a crucial ingredient of collective agency... [which] is not simply the sum of the efficacy beliefs of individual members [but] an emergent group level attribute” (Bandura 1998).

Table 2. Impact and response to Typhoon Haiyan in Visayas Islands, Philippines, in comparison with other natural disasters in Gujarat and Tamil Nadu, India

Issues	Gujarat-India	Tamil Nadu-India	Visayas-Philippines
Type of disaster	Earthquake	Tsunami	Super Typhoon Haiyan
Date of disaster	26 January 2001	26 December 2004	8 November 2013
Number of deaths	19,727	12,405	6,000 ⁱ deaths and 1,779 missing ⁱⁱ
Estimated number of destroyed houses	344,000	157,400	490,000 destroyed; and 520,000 damaged ⁱ
Reconstruction policy (RP)	First RP released 3 weeks after disaster faced resistance. Public consultation in 468 villages, 90% of people refused relocation	First RP issued in January 2005, permanent relocation of all coastal communities in new housing; little importance to housing damage assessment	RAY issued in December 2013 ⁱⁱ ; Post -Yolanda master rehabilitation plan approved on July 28,2014 ⁱⁱⁱ
Type of reconstruction	72% owner-driven; 28% contractor-driven	Contractor-driven, reconstruction by NGOs and private corporations	Reconstruction approaches (RA) have not been yet been specified at policy level. Current RA depend on agencies' funding and agenda. The government seems to support agency- or contractor- driven reconstruction through public-NGO and public-private partnerships.

Source: Modified by the author based on Dwyne Barenstein (2010) and data from the following sources: ⁱShelter Cluster (2014); ⁱⁱNational Economic and Development Authority (2013); and ⁱⁱⁱPaterno (2014).

built during the first six months of the response (Shelter Cluster Philippines 2014). Table 2 compares the impact of and response to Haiyan with other natural disasters. The super typhoon destroyed 1.4 times more houses than the earthquake in Gujarat, India and 3.11 times more houses than the tsunami in Tamil Nadu, India.

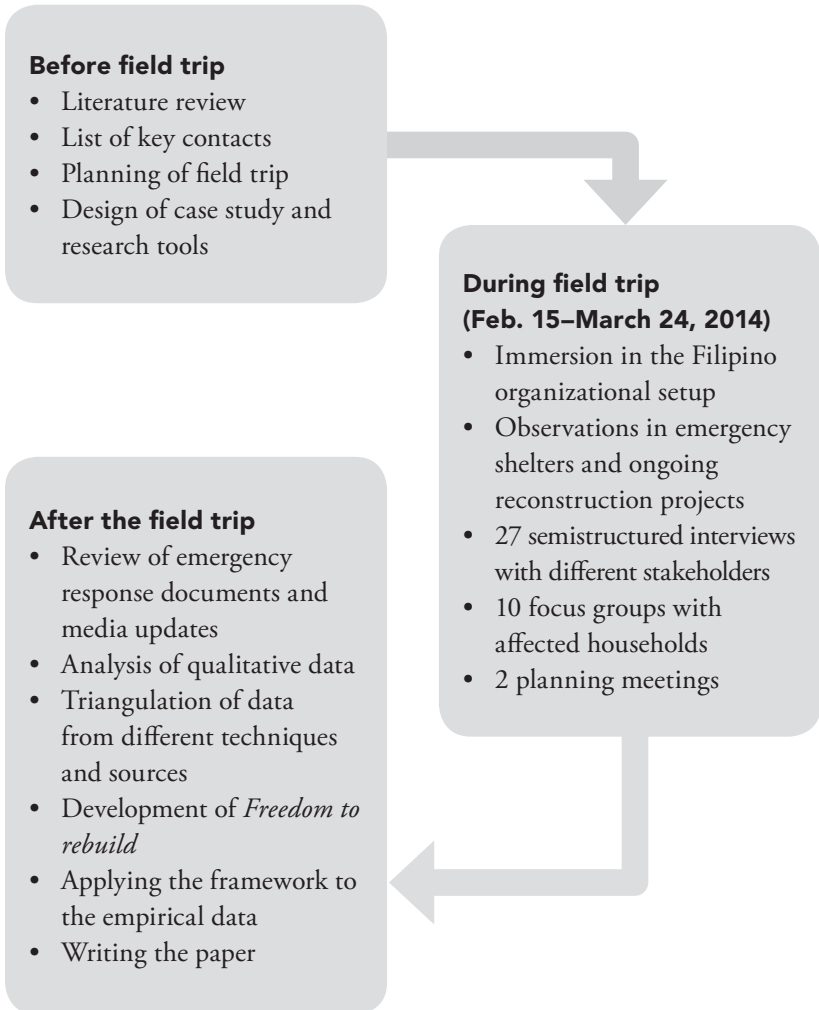
The main principles of Reconstruction Assistance on Yolanda (RAY), the Philippine government's strategic plan to guide recovery and reconstruction, are coordination⁴ of common goals and standards between different stakeholders and a phased-out, cumulative, and flexible approach (National Economic and Development Authority 2013). RAY emphasizes the importance of involving the private sector and the need for self-recovery and community participation. However, there is concern about lack of involvement of the affected people and a corporate takeover of the reconstruction and rehabilitation (Aytin 2014). Conversely, underlying political forces might be the reason why the Housing and Urban Development Coordinating Council (HUDC) has not been given the task of policy-making for housing reconstruction.

METHODOLOGY

The research questions addressed are (a) how have users been involved in housing reconstruction processes? (b) how has the reconstruction process contributed to enhance affected people's capabilities? (c), and how can a postdisaster housing reconstruction framework be developed that evaluates users involvement and leads to more resilient communities? The main research method is a qualitative case study, due to the explanatory strength

4 The Presidential Assistant for Rehabilitation and Recovery (PARR) has the leading role for reconstruction. The leading government agency for relief and rehabilitation, the Department of Social Welfare and Development (DSWD), handled distribution of 30,000 PHP for building materials to families that have repaired their houses. The Department of Public Works and Highways (DPWH) oversees implementation of public infrastructure and constructed the bunkhouses; and National Housing Authority (NHA) has the responsibility for reconstruction of 60,000 permanent housing in three years. In the Philippines, the Shelter Cluster is led by DSWD and co-chaired by the International Federation of the Red Cross Crescent Societies (IFRC) and the Office of the United Nations High Commissioner for Refugees (UNHCR).

Figure 1. Research strategy for collecting empirical evidence in areas affected by Haiyan. Constant comparison for analysis of empirical data from different reconstruction approaches has been implemented to test categories such as users involvement



Source: Elaborated by the author

of this methodology (Yin 2003), and its concern with process and focus on identifying underlying factors (Gillham 2000). A five-week field trip was implemented in Metro Manila, Tacloban, Palo, Tanauan, Javier, Ormoc, and Daanbantayan.⁵ The research strategy is summarized in Figure 1. Qualitative data were analyzed related to categories such as reconstruction approach, users involvement, and capabilities. These allowed for establishing a chain of evidence and obtaining a comprehensive understanding of the case. For achieving trustworthiness, triangulation of data from different techniques and sources was performed.

APPROACHES TO HOUSING RECONSTRUCTION IN AREAS AFFECTED BY HAIYAN

An overview of reconstruction projects in areas affected by Haiyan has been summarized in Table 3. Data from five projects show the number of storeys, house area, construction cost per unit, scale of intervention, funding source, and the actors and their roles.

In-situ repair and reconstruction of previous shelter in Daanbantayan, north of Cebú

Local families, overseas Filipino workers, faith-based organizations, and international agencies provided immediate emergency shelter relief in terms of corrugated iron sheeting, fixings, coco lumber, and tools to affected families. Lack of technical assistance and poor building skills is reflected in shortcomings in the local production of hollow concrete blocks due to inadequate equipment and poor skills (see Figure 2). Inefficient construction practices for concrete hollow-block houses include (a) repair of damaged concrete structures composed of columns and beams; and (b) joining walls, windows, and doors through secondary structural elements to make the construction system more resistant—e.g., in-situ repair in which a column has been patched several times. Local native buildings such as the *nipa*

5 For the field trip, collaboration with We Effect, National Housing Authority and the Servants of the Plan of God was key for visiting bunkhouses; informal settlements in no-build zones, municipalities, temporary shelter solutions and on-going reconstruction projects in Leyte and the North of Cebú.

Table 3. Comparison of selected reconstruction projects in areas affected by Haiyan in Leyte

Project Name	Number of storeys	House area (m²)	Construction cost per housing unit (PHP)
Temporary shelter Municipality of Javier	1	13.5	15,000 (estimated)
Temporary shelter Catholic Relief Services (CRS) in Palo	1	24	33,000
Permanent housing Munc Tanauan, National Housing Authority (NHA), Gawad Kalinga (GK)	1 with loft and 2 storeys	36.4	244,000
Permanent housing We Effect (WE), NATCCO, NEDC, OCCCI in Ormoc	1	25	160,000 (7% increase from 150,000)
Medium-rise building National Housing Authority (NHA) in Villa Cristina, Tacloban	3	24	450,000

Scale of intervention (housing units)	Funding source	Actors and their roles
56	Private/public sector	Municipality: materials, design, payment to skilled operators to produce coco lumber and build houses Mayor: plastic roof, chain saws Families: labor partially
55,000	International donors	Catholic Relief Services: cash for housing Families: decision over housing design and construction method
1st site: 353 Total: 1,200	Public/local NGO	Municipality: partnership coordinator National Housing Authority: design, land development, funding Gawad Kalinga: land purchase and donation to Municipality, contractor Families: unskilled labor
NATCCO: 750 (including 30 units in pilot project with WE funding), HFHP: 750	International donors, housing coops	We Effect: funding 30 units, NATCCO: fundraising for 720 units Habitat for Humanity Ph: funding 750 units
NA	Public	NHA: design, land development Municipality: provide land International agencies/NGOs: developer/contractor Families: not involved

Source: *Elaborated by the author based on empirical data from the field trip in Javier, Palo, Tanauan, Ormoc and Tacloban.*

house—the Philippines vernacular house made of woven bamboo walls—have been repaired more easily by the people.

Reparation of previous makeshift shelter in no-build zone in Tacloban, Leyte

After the typhoon, the central government ordered the enforcement of a no-build zone policy in coastal communities through prohibiting the construction of houses and settlements within 40 meters of the shoreline. Filipino poor people are used to solving their shelter needs by themselves through spontaneous self-help housing because they do not qualify for credit to access permanent housing. The destruction overwhelmed the local government of Tacloban so that there were no clear guidelines on how and where to build back better in the aftermath of the disaster. Three months after Haiyan, informal settlers had rebuilt their shelters in the same location where they used to live (see Figure 3) because they were not given the option to relocate in the tent city, bunkhouses, or temporary shelter outside the no-build zone. This was done without any technical assistance, using tarpaulins, corrugated iron sheeting, fixings, and tools provided by international agencies and local NGOs. As a result, predisaster vulnerabilities were reproduced due to poor building skills with wood (e.g., improper junctions in the framework) and lack of secure fixings for the roof (which were done only with nails).

During the field visit, the National Housing Authority (NHA) was developing a nine-hectare site for reconstruction of one-storey row houses with a walking loft. NHA has also proposed a reconstruction project with three-storey medium-rise buildings (MRB) in Villa Cristina. Planning for developing 86 hectares in the north of Tacloban was also ongoing through a partnership between the Municipality of Tacloban and UN-Habitat.

Expanding people's opportunities to rebuild in Javier, Leyte

Javier is a small municipality located inland in Leyte. The municipality used heavy equipment to clean the debris off the main road to reconnect Tacloban with the rest of the cities during a three-day operation; it also provided food assistance to neighboring cities in the aftermath of the disaster because they were prepared for the typhoon. This municipality is expanding people's opportunities and choices to rebuild in various ways that suit their lifestyle through different reconstruction approaches: (a) enhancing construction

Figure 2. Manually tamping concrete in steel mould box for production of hollow blocks. Inadequate equipment and skills affect material strength and its resistance to calamities. Daantantayan, north of Cebu. Photo: by the author, March 10, 2014.



Figure 3. Makeshift shelter rebuilt by informal settlers in no-build zone in Tacloban, Leyte. Tarpaulins and roofing materials distributed by international agencies and recycled materials have been used. Photo: by the author, March 11, 2014.



capacity of skilled labor; (b) supporting households to rebuild; (c) providing temporary shelter with local materials; and (d) agency-driven reconstruction on relocated sites with sweat equity of the community. First, the municipality, in partnership with Holcim⁶ and the Technical Education and Skills Development Authority (TESDA), trained forty-nine men and one woman in making concrete hollow blocks (see Figure 4). Second, the mayor of Javier provided chain saws to allow thirty operators to produce coco lumber from fallen trees, which was distributed to twenty-eight *barangays* (villages) for the communities to use to repair their houses. Third, the municipality provided temporary shelter to an additional fifty-six affected families, built with local materials such as coco lumber and other wood and corrugated iron and transparent sheeting. Temporary shelters using improved local construction techniques enhance the self-construction skills of householders who can easily self-build extensions, as shown in Figure 5.

Finally, the municipality plans to implement a reconstruction project of around 322 permanent houses in partnership with Habitat for Humanity Philippines (HFHP) in Binulho. This NGO functions as a developer with a non-profit making purpose that works with contractors who agree to build at the cost set by the NGO with sweat equity from affected community members and volunteers. HFHP is able to keep construction costs low because they obtain discounts when buying construction materials. They issue donation receipts to the suppliers, who can deduct the amount from their taxes.

Shelter as humanitarian assistance through cash for housing in Palo, Leyte

Catholic Relief Services (CRS) offers affected families 33,000 PHP through a cash-for-housing approach. Families decide the house design and construction method. “We were asked what material we liked...we chose *amakan* [woven bamboo]...it is cooler than concrete and we wanted to raise up the house” (Household 1). The house is raised up on a concrete and wooden footing, and the structure is made of coco lumber, with woven bamboo walls and coco lumber for fixing the 0.47mm sheet iron roof (see Figure 6).

“My husband helped in the construction...we did not pay for the house... it is on the same plot we lived on before” (Household 1). Figure 7 shows

6 Holcim is a Swiss private industry that produces cement and concrete.

Figure 4. Machines for producing hollow concrete blocks that will be sold to agencies involved in the reconstruction of other cities. Javier, Leyte. Photo: by the author, March 12, 2014.



Figure 5. Temporary coco lumber and wood shelter, elevated 0.90m above the plot; a self-built extension at the back of the house is used as a covered kitchen. Javier, Leyte. Photo: by the author, March 10, 2014.



the poor junctions in the roof framework; although users were involved in the housing construction, their woodworking skills have not improved. The CRS project shows that people had decision-making power in planning their house, and the opportunity to choose among construction methods, but the project does not include enhancing the self-construction capacity of the affected people, who continue to reproduce predisaster vulnerabilities. “We have a zinc roof and bamboo walls; before our roof was *nipa*. This is a stronger house but it will not resist another typhoon like Yolanda... then we need to evacuate.” Although householders are satisfied with the house, they are aware that they are still vulnerable.

RECONSTRUCTION OF PERMANENT HOUSING

Agency-driven reconstruction with users involved as unskilled labor in Tanauan, Leyte

It is estimated that 95% of people were affected in Tanauan. The reconstruction of permanent housing using a National Housing Authority (NHA) design was ongoing in Tanauan (see Figure 8), although the design lacked final approval by another governmental agency. Conversely, the reconstruction in Tacloban was delayed until the same housing design was approved. The mayor of Tanauan was able to initiate a public-NGO partnership between the municipality, the NHA and Gawad Kalinga Community Development Foundation (GK). GK acquired land from private owners and donated it to the municipality to build twelve hundred houses on three sites. The housing typology is one-storey row houses with a walking loft made of reinforced hollow concrete blocks with pitched roof (see Figure 9). To avoid creating incentive for profit-making, these houses are being built by skilled workers with the technical assistance of a *bayani* contractor; bayani contractors are professionals who were the beneficiaries of previous GK projects.

This reconstruction project involves users as unskilled labor who contribute with their sweat equity in activities such as passing or carrying construction materials and sieving sand. GK claims that this type of participation is a starting point for community organizing, although the community has neither control nor decision-making power over the reconstruction process.

Figure 6. Temporary shelter made with amakan, traditional woven bamboo wall, elevated 0.80m above the plot, provided by CRS in Caparas an Guti, Palo, Leyte. Photo: by the author, March 13, 2014.



Figure 7. Interior of temporary amakan (bamboo) shelter provided by CRS showing poor construction skills in the coco lumber roof framework in Caparas an Guti, Palo, Leyte. Photo: by the author, March 13, 2014.



Figure 8. Users are involved as unskilled labor to pass or carry construction materials in Tanauan Leyte. Photo: by the author, March 11, 2014.



Figure 9. Permanent row house with walking loft designed by NHA and built by GK in Tanauan, Leyte. Photo: by the author, March 11, 2014



Enhancing users self-construction and self-management capabilities in Ormoc, Leyte

We Effect,⁷ NATCCO, NEDC, and OCCCI are expanding people's opportunities and choices within the organized self-help reconstruction (OSHR)⁸ process—which is based on the Filipino cooperative and collaborative *bayanihan* spirit—and promoting housing cooperatives in the Philippines. The housing typology is one-storey, single detached housing with hip roof, built with a metal framing system—metallic coated structural zincalume—with bamboo and ferrocement walls (see Figures 11 and 12).

The treated woven bamboo walls are covered on both sides with welded reinforced mesh that is plastered. Twenty-seven men and thirteen women have participated in the pilot construction of thirty houses with the technical assistance of an engineer, a social worker, a foreman, and five skilled workers. At least one family member or family representative has to contribute 300 hours of mandatory sweat-equity work, Monday to Saturday. Other family members join the work on Saturdays. This project is community-driven through organized self-help reconstruction (OSHR) on a relocated site. The OSHR process is improving the capabilities of affected families while empowering them in several respects, analyzed in Figure 13. Women have conducted various self-construction tasks, such as preparing, cleaning, or weaving bamboo, making hollow concrete blocks, excavating foundations, or assembling the light metal zincalume framework. Women have decided to be responsible for all of the bamboo work (see Figures 10 and 11). Men are responsible for excavation, co-production of hollow concrete blocks, and assembling the metallic structure.

In the We Effect-NATCCO OSHR process, the freedoms available to people are (a) opportunity and choice between self-construction activities with technical assistance and very high involvement of women; (b) co-production of

7 We Effect: former Swedish Cooperative Center is collaborating with the National Confederation of Cooperatives (NATCCO) on a reconstruction project in Ormoc, Leyte. NATCCO Enterprise Development Center (NEDC) and Metro Ormoc Community Cooperative (OCCCI) are providing on-site technical assistance and social organizing.

8 Organized self-help reconstruction (OSHR) is the application of organized self-help housing in post-disaster reconstruction, defined as “a process that involves the community’s active participation and decision making in planning, design, self-construction, and post-project activities with technical assistance of a facilitating organization” (Arroyo & Åstrand 2013 in Arroyo 2013, 4).

Figures 10 and 11. Women cutting, cleaning, and weaving bamboo for the walls of their permanent housing. Over the concrete foundation, four rows of hollow concrete blocks are laid out. The zincalume framework is fixed to this base. The bamboo is woven horizontally in the zincalume framework to improve its resistance to wind. The walls will be plastered on both sides to protect the bamboo from rain. Project by NEDC, OCCCI, NATCCO and We Effect in Ormoc, Leyte. Photo: by the author, March 6, 2014.



construction materials—woven bamboo for walls and hollow concrete blocks; (c) training in co-operative principles and leadership; and (d) enhancing community self-construction capability for working as paid skilled laborers or as trainers of other cooperative members through mutual help. Families that reached 300 hours of sweat equity in the pilot project were hired and paid for their self-construction work. Thirty of the people who self-built the pilot houses—including thirteen women—decided to create a worker’s association. They have been hired by HFHP to build 240 houses with the same construction method on the same site.

Regarding permanent housing, the We Effect-NATCCO-HFHP alliance will achieve a larger scale than if they were working independently because HFHP has committed to building 750 zincalume and bamboo houses and NATCCO will match this with 750 more houses in Leyte and Samar provinces. However, the scale of intervention of any NGO or municipality is much larger when NHA is part of the partnership, as shown in Table 3.

Figure 12 Permanent one storey housing with zincalume structure on hollow blocks base, and bamboo woven walls which have been plastered both outdoors and indoors in Ormoc, Leyte. We Effect-NATCCO project gained the distinction of completing the first thirty permanent houses for Yolanda-affected families in the whole Eastern Visayas Islands. Photo: Arlou M. Losano, NEDC, May 31, 2014.



INCREMENTAL GROWTH OF HOUSING UNITS FOR MEDIUM-RISE BUILDINGS

The variety of approaches to housing reconstruction in which temporary shelter lacks the possibility to evolve into permanent housing shows the divergence between humanitarian assistance, urban development discourses, and in-the-field practice. As seen in the previous section, one-storey housing is the prevalent housing typology without any planned expansions, either horizontal or vertical. Although the storm surge of five-meter tsunami-like waves destroyed one-storey shelter and people sought refuge in the two-storey houses of better-off neighbors, medium-rise buildings will be implemented by NHA only in the Villa Cristina project. NHA has proposed to international agencies to combine different funding sources to finance permanent housing in medium-rise buildings. However, this has not been possible because each international agency has its own agenda, timing, and approach to reconstruction. These agencies also seem to be concerned with the issue of how to report or evaluate their output if the funding they received from their donors is combined with the funding of other agencies.

GUIDELINES FOR A POLICY FOR RESILIENT RECONSTRUCTION

Based on Turner and Sen (Turner and Fichter 1972; Turner 1976; Sen 1999) and empirical data, this paper proposes “freedom to rebuild” as a capability-approach framework for postdisaster reconstruction. The framework aims at reorienting building back better from focusing only on stronger shelter towards building resilient communities (see Figure 13). The framework is composed by four functionings: (a) freedom to plan/design; (b) freedom to decide collectively; (c) freedom to self-build or self-manage with technical assistance; and (d) freedom to evaluate in real time. First, structural vulnerabilities are identified according to each functioning—e.g., through questions such as: What is hindering people’s freedom to plan or design? Second, a scale, ranging from unfree to limited freedom, enhanced freedom, and empowered, has been established to measure the freedom to access each functioning.

The four functionings are assessed in relation to the three dimensions of capabilities: opportunities; choice; and, capacity. For example, in Figure 13,

Figure 13. A capability approach framework to postdisaster reconstruction that identifies structural vulnerabilities and evaluates freedom to rebuild in terms of three dimensions of capabilities: (a) opportunities, (b) choice, and (c) capacity. The framework has been applied to We Effect-NATCCO’s reconstruction project

	Functionings	Vulnerability	Capabilities (unfree, limited freedom, enhanced freedom, empowered)			Resilience (no resilience, limited resilience, enhanced resilience, high resilience)
Freedom to rebuild	Freedom to plan/design	Technocratic approach to planning and design	Opportunities Unfree. Community has not participated in settlement planning or housing design	Choices Unfree. No choices among different housing typologies	Capacity Unfree. Community has not developed capacity for planning/design	No resilience for future planning/design tasks
	Freedom to decide collectively	Hierarchical society, decision making power by the elite or politicians	Enhanced freedom. Community decides over self-construction process and leadership of the cooperative	Enhanced freedom over tasks within the self-construction process; and course of action to build gains of the project	Enhanced freedom. Community is learning to decide collectively	Enhanced resilience when collective decision making is needed
	Freedom to self-build or self-manage	Dominance of private sector over construction or management activities	Empowered. Community is in control over the self-construction process; access to leadership and governance training for housing cooperative	Empowered. Community decides who does what, when and why on self-construction; and how to implement cooperative leadership	Empowered. Feel secure about how to self-build with bamboo and can apply knowledge to livelihood or being trainer of others	High resilience for self-building or self-manage reconstruction projects if facing new calamity
	Freedom to evaluate in real time	Evaluation of housing programmes by the Philippine Institute for Development Studies with a focus on program efficiency and effectiveness	Limited freedom. Housing coops and agency open to community feedback but no formal process for evaluation has been established	Limited freedom. Only informal spoken feedback to project leaders	Limited freedom. Community has not developed critical skills	Limited resilience on evaluating current project and improving the process if facing new calamity

Source: Elaborated by the author based on the theoretical framework and empirical data from field trip in Ormoc.

the community participating in the We Effect reconstruction project is un-free to plan/design, has enhanced freedom to decide collectively, has limited freedom to evaluate the project, but is empowered regarding freedom to self-build and self-manage. Arguments supporting the different assessments of each freedom are further explained in the table. Third, a scale ranging from no resilience to limited resilience, enhanced resilience, and high resilience has been set to assess resilience independently. This scale was introduced to prevent cases in which freedom leads to high negative empowerment and limited community resilience.⁹

A building back better reconstruction policy for Haiyan affected areas ought to:

1. Improve partnership and collaboration between governmental agencies, institutional actors, and the community to avoid the creation of profit-making incentives in housing reconstruction.
2. Overcome inequalities previous to the disaster—e.g., excluding slum dwellers from reconstruction projects—to avoid replication of predisaster vulnerabilities.
3. Expand people's freedom to rebuild by (a) offering them the opportunity to choose between different reconstruction approaches; (b) enhancing self-construction and self-management capabilities of the affected community; (c) improving local construction techniques; (d) co-producing building materials; and (e) testing new types of partnerships and co-funding among actors.
4. Encourage organized self-help reconstruction (OSHR) among reconstruction approaches through public-NGO partnerships for involving the affected users in the process.
5. Institutionalize the freedom to rebuild framework as a tool for early-stage evaluation of communities to assess how different reconstruction

9 For example, a group of community leaders are empowered regarding freedom to self-manage due to opportunities, choices, and enhanced capacities, but they exert oppression on other members of the community which implies limited resilience on freedom to decide collectively.

processes are contributing to counteract structural vulnerabilities and improving or limiting their capabilities.

6. Support the design and construction of medium-rise buildings in which core apartment units can expand horizontally or vertically while providing semipublic space for short-term common use—e.g., fishermen opening their nets in the evening. Two- or three-storey walk-up buildings would withstand future calamities better due to stronger structures while promoting compact development.

CONCLUSIONS

The building back better approach of the Philippines government focuses mainly on building permanent and finished housing more resistant to winds of 300 km/hour. Minimizing construction costs and increasing mass production due to time concerns are decision-making criteria. Current challenges for housing reconstruction include (a) reorienting building back better from a focus on stronger houses towards building more resilient communities; (b) lack of land owned by municipalities or governmental agencies; (c) the complexity of coordinating the work of more than seventy stakeholders; and (d) control over the increase in construction costs. The cost of the We Effect-NATCCO project increased 7% due to speculation on construction materials. The main challenge is to shift the policy from agency-driven to owner- and community-driven reconstruction. In Gujarat, 72% of housing reconstruction was owner driven while only 28% was contractor driven. Hence, owner-driven reconstruction is an approach suitable for the large-scale damage caused by Haiyan. To achieve such an approach implies that the government *enables freedom to rebuild* through expanding people's opportunities and choices to rebuild and recover in a way that allows them to achieve the lifestyle they value. Investing reconstruction funding in such a way will lead to multiple outcomes: stronger homes by more capable and resilient communities that are less vulnerable to future calamities.

REFERENCES

- Arroyo, Ivette. 2013. *Organized Self-Help Housing as an Enabling Shelter and Development Strategy. Lessons from Current Practice, Institutional Approaches and Projects in Developing Countries*. Lund: Housing Development and Management, Lund University.
- Aysan, Yasemin, Muhammed Aheeyar, Paul Harvey, and Shanthi Satchithanandam. 2007. "External Evaluation Report on the Cash for Repair and Reconstruction Project Sri Lanka." <http://www.alnap.org/resource/8342> (accessed June 18, 2014).
- Aytin, Andrew. 2014. *Aquino's "Build Back Better": A Corporate Takeover of Government's Reconstruction Program*. <http://www.intal.be/nl/blogs/hans-schaap/aquinos-build-back-better-corporate-takeover-governments-reconstruction-program> (accessed June 30, 2014).
- Bandura, Albert. 1998. "Personal and Collective Efficacy in Human Adaptation and Change." *Advances in Psychological Science* 1:51–71.
- Belgian Red Cross. 2009. "Post-Tsunami Housing Reconstruction Kalutara District, Sri Lanka. Final Report and Lessons Learnt." <http://www.ifrc.org/docs/Evaluations/Evaluations2009/Asia%20Pacific/SLtsunamiReconstructionBelgianRC.09.pdf> (accessed July 14, 2014).
- Collins, Andrew. 2009. *Disaster and Development*. New York: Routledge.
- Duyne Barenstein, Jennifer. 2010. "Who Governs Reconstruction? Changes and Continuity in Policies, Practices and Outcomes." In *Rebuilding after Disasters*, edited by Gonzalo Lizarralde, Cassidy Johnson, and Colin Davidson, 149–76. New York: Spon Press.
- Frediani, Alexandre. 2010. "Sen's Capability Approach as a Framework to the Practice of Development." *Development in Practice* 20 (2): 173–87.
- Frediani, Alexandre. 2007. "Amartya Sen, the World Bank, and the Redress of Urban Poverty: A Brazilian Case Study." *Journal of Human Development* (Routledge) 8 (1): 133–52.
- Gillham, Bill. 2000. *Case Study Research Methods*. London-New York: Continuum.
- Jha, Abhas, Jennifer Duyne Barenstein, Priscilla M. Phelps, Daniel Pittet, and Stephen Sena. 2010. *Safer Homes, Stronger Communities. A Handbook for Reconstructing after Natural Disasters*. Washington, DC: The World Bank, 2010.
- Joakim, Erin. 2013. "Resilient Disaster Recovery: A Critical Assessment of the 2006 Yogyakarta, Indonesia, Earthquake using a Vulnerability, Resilience and Sustainable Livelihoods Framework." University of Waterloo. <http://uwspace.uwaterloo.ca/handle/10012/7315> (accessed July 16, 2014).
- National Economic and Development Authority. 2013. *Reconstruction Assistance on Yolanda*. <http://www.worldbank.org/en/news/video/2013/12/17/philippines-building-back-stronger-homes-and-communities-after-typhoon-haiyan> (accessed June 27, 2014).
- Paterno, Esmaguel II. 2014. "Before SONA, Aquino OKs Yolanda rehab plans for Tacloban, 5 others." <http://www.rappler.com/nation/64584-aquino-approves-yolanda-rehabilitation-plans> (accessed July 28, 2014).
- Schilderman, Theo, and Michal Lyons. 2011. "Resilient Dwellings or Resilient People? Towards People-Centred Reconstruction." *Environmental Hazards* 10 (3–4): 218–31.
- Sen, Amartya. 1999. *Development as Freedom*. New York: Knopf.
- Shelter Cluster Philippines. 2014. *Infographic: Six Months after Typhoon Haiyan*. <https://www.sheltercluster.org/Asia/Philippines/Typhoon%20Haiyan%202013/Pages/Documents.aspx> (accessed July 2, 2014).

- Turner, John F.C. 1976. *Housing by People. Towards Autonomy in Building Environments*. London: Marion Byers.
- Turner, John F., and Robert Fichter (eds). 1972. *Freedom to Build*. New York: The Macmillan Company.
- UNISDR. 2009. *2009 UNISDR Terminology on disaster Risk Reduction*. <http://www.unisdr.org/we/inform/publications/7817> (accessed June 26, 2014).
- Yin, Robert. 2003. *Case Study Research. Design and Methods*. London: SAGE Publications.

Self-employment in the Informal Sector: Empty Promise for Absorbing Unemployed Urban Youth? New Evidence from Ghana

Signe Jung Sørensen

London School of Economics and Political Science

ABSTRACT

This paper aims to question the underlying assumption that the informal microenterprise (IME) sector will be able to absorb unemployed urban youth and understand how current informal skills development programs may address this issue in Ghana. A comparative descriptive analysis is carried out by complementing quantitative analysis with qualitative interviews. Findings suggest a need for revisiting the absorptive capacity of the IME sector. First, most informal sector activities are found to be stagnant overall, facing several macrolevel constraints. Second, it appears that lack of formal education in particular, accompanied by little or no relevant work experience, may be an important barrier for youth in becoming self-employed.

INTRODUCTION

The urban youth unemployment situation in sub-Saharan Africa (SSA) continues to give rise to grave concerns. Although economic growth has picked up in the last decade, the creation of new jobs continues to be inadequate in relation to the high growth of the population and the rapid expansion of the labor force. Education for All policies resulting in large cohorts of primary school leavers combined with the unavailability of jobs has led large portions

of the young workforce in urban areas to turn to the informal sector—in particular to informal microenterprises (IMEs)—for the generation of employment and incomes (AfDB 2012; Filmer and Fox 2014).

Characterized by unregistered businesses engaged in non-agricultural activities with few or no employees, it is estimated that the IME sector has absorbed the majority of all new entrants to the labor markets in the past. Subsequently, policy makers are optimistic about the potential of the sector for reducing youth unemployment, thereby including and engaging youth in the urban space (Filmer and Fox 2014).

As a result of promoting the informal sector for youth employment, the role of technical and vocational education and training (TVET) has taken center stage in debates as a means to facilitate the transition to work in urban areas (ILO 2014). In the short run, recognizing that the informal sector continues to be a source of employment, targeting skills for this sector is increasingly encouraged (Adams et al. 2013). National government programs supporting the supply of informal apprenticeships in selected trades have recently been promoted in West and Central Africa as pertinent self-employment generating schemes for the informal sector (UNESCO-UNEVOC 2013). Consisting of a contractual arrangement between a young individual and a master craftsman who agrees to provide practical training in the workplace, informal apprenticeships are generally perceived to have high and immediate prospects for self-employment after completion (Adams et al. 2013).

Although policy makers may be optimistic, the extent to which the informal economy will continue to absorb large and often poorly educated youth remains in question, particularly as IMEs increasingly face external constraints and important barriers to entry (Fafchamps and Woodruff 2012). Meanwhile, the design of government programs seems to rest on the assumption that youth will easily be able to establish themselves as self-employed in the informal sector upon completion of informal apprenticeships. Given the nascence of these programs, it is still too early to examine their effect on youth unemployment; yet, as the Arab Spring has highlighted, the success of the youth transition to employment has important implications for social cohesion (OECD 2011). Government schemes falling short of the expectations of youth, based on potential overestimations of the absorption capacity of the informal sector, is therefore a particularly salient issue.

This paper aims to question the underlying assumption that the informal sector will be able to absorb unemployed youth in urban areas in the form

of self-employment in the IME sector. It will do so by examining the case of Ghana, which is a highly topic-relevant country to study: youth unemployment rates are well above adult unemployment rates in urban areas; over 80% of youth are already engaged in informal activities and the government increasingly perceives skills training through TVET as a critical area (Darvas and Palmer 2014). Furthermore, a government initiative promoting skills through informal apprenticeship in selected trades—the National Apprenticeship Programme (NAP)—has recently been rolled out nationally, claiming to be the solution for Ghana’s unemployed youth (*ibid.*).

Specifically, therefore, this paper will seek to address the following main question using Ghana as a case study: Does the informal sector currently have the potential for absorbing urban unemployed youth and what barriers have to be overcome?

Until now, informal enterprises in Ghana and other SSA countries have, at best, been understood through data collected on formally registered small and medium enterprises. The shortage of data and microlevel studies on informal sector activities and characteristics have in particular contributed to a substantial lack of knowledge regarding the design of skills development initiatives for that sector (Leino 2009, 2; Walther 2010, 4). Based on access to two new quantitative datasets, complemented by in-person interviews with trade associations and government officials in Ghana, this study triangulates descriptive statistics with qualitative components to gain further insights into data trends and enhance confidence in the paper’s findings. The quantitative data is drawn from: (1) a new World Bank dataset on urban informal enterprises in Ghana; and (2) baseline data on unemployed youth from an ongoing impact evaluation by Hardy et al. (2013), affiliated with the Innovations for Poverty Action (IPA) of the NAP. The research question will be addressed by analyzing the current landscape of IME activities in Ghana comparing the main features of the current informal enterprise of young owners to current unemployed youth.

Main findings suggest that the existence of external constraints potentially limits the overall expansion of the IME sector and that lack of formal education and relevant work experience may be important barriers for current unemployed youth in achieving self-employment. Based on a comparative analysis, it should be acknowledged that this paper provides only a limited descriptive snapshot of the IME sector in Ghana as it stands. However, given the currently limited available information in this area, this study makes a

first attempt to examine the promise of the IME sector for reducing urban youth unemployment in SSA, using Ghana as an in-depth case study.

The paper is structured as follows. The first part gives a brief description of the Ghanaian context and the NAP and outlines the data and methodology adopted. The second section investigates the capacity of Ghana's informal sector for absorbing unemployed youth and the prospects of the NAP for increasing self-employment in the sector. Findings and their policy relevance are then discussed in a final section.

CASE STUDY CONTEXT, DATA, AND METHODOLOGY

Ghana's annual growth performance has averaged 5.1% between 1984 and 2010, but employment growth has tended to lag behind due to the slow growth of the labor-intensive sectors of the economy (Aryeetey et al. 2014, 277). Although the unemployment rate has declined somewhat in Ghana, currently reaching around 5.3%, it is substantially higher among youth aged 15–24 at 15% (Ghana Statistical Service 2013, 5). These 15% mask important geographical disparities: the youth unemployment rate is about twice as high in urban areas than in rural areas (*ibid.*, 6).

Although Ghana is yet to have a comprehensive national strategy that focuses primarily on employment, key strategic documents on economic growth in Ghana uniformly identify human capital development as a cornerstone of the country's development (Government of Ghana 2005; National Development Planning Committee 2008, 2010). Given that informal apprenticeship training is estimated to be responsible for some 80–90% of all basic skills training in Ghana, compared with only 5–10% from public training institutions and 10–15% from formal providers, the government has taken a large interest in improving the structures of apprenticeship training (Atchoarena and Delluc 2001, 198). A white paper in 2004 advocated for full state sponsorship of informal apprenticeships, which led to the launch of the NAP in 2011 to be organized and implemented by the Council for Technical and Vocational Education and Training (COTVET) (Darvas and Palmer 2014). The program is targeted at junior high school leavers and sponsors youth to receive a year-long apprenticeship in a service or local manufacturing trade in six areas: tailoring, hairdressing, block laying, welding, carpentry, and information and communications technology (ICT). Early comments on

the design of the program (Baffour-Awuah 2013) and subsequently on its implementation and reach (Darvas and Palmer 2014) have highlighted several issues. Foremost, the length of the program has been criticized, as one year is argued to be too short. However, no commentary encountered has directly questioned the self-employment prospects for young people who finish the NAP. This is an important component to address, given that it is the ultimate aim of the program, raising the hopes of youth for future self-employment.

In order to examine these prospects, three sources of data are used in the analysis. The empirical strategy adopted relies on descriptive statistics, supported by qualitative findings. This triangulation methodology was chosen to enhance confidence in the validity of the quantitative findings, given the generally weak and fragmented data from the informal economy (Bryman 2009; ILO, 2013).

The first quantitative dataset includes information on current informal enterprises and their owners, available from the World Bank's Informal Enterprise Survey (World Bank 2013) conducted across Ghana from April 1 to May 11, 2013. It contains information on 724 IMEs, whose owners were interviewed in urban centers in Ghana's major cities (Accra, Tema, Takoradi, Kumasi, and Tamale). The second quantitative dataset is a baseline dataset on NAP applicants, collected by Hardy et al. (2013), affiliated with IPA between September 2012 and February 2013. It allows establishing a recent and detailed profile of unemployed youth in predominantly smaller urban areas seeking to gain skills for self-employment in the IME sector. The full sample consists of 4,797 young adults from 36 nationally representative districts and is part of a randomized controlled trial on the impact of the NAP on wages. Finally, the author conducted semistructured interviews in Ghana in January 2014 with 14 respondents. The first group included trade and employment association leaders in different informal sectors, whose input was deemed necessary to understand the constraints on self-employment in the IME sector on the ground. The second group of respondents included government officials involved in the design and implementation of the NAP as well as other government officials at the Ministry of Education. Two representatives from each association or governmental department were interviewed to cross-check statements.

More specifically, this study will rely on a number of comparisons, both within and between datasets. A comparison is made between expanding and non-expanding enterprises and the characteristics of their owners using

the World Bank dataset. “Expanding” is defined as whether, in the past three years, the number of employees, machinery used, or space occupied by the enterprises have increased and is used as a proxy for the success and dynamism of the enterprise. The profile of all young existing enterprise owners in the World Bank dataset is also compared with a profile of existing unemployed youth, established from the Hardy et al. (2013) dataset. The World Bank sample is restricted to young owners, given that these may constitute the group that current unemployed youth seek to join. Observations are supported throughout by findings and statements from qualitative interviews.

Although this study uses new and nationally representative datasets, two types of caveats should be disclaimed. First, relating to the World Bank dataset, “expansion” may be a somewhat crude measure of the success of—and demand for—an IME’s products or services. A host of factors could drive the expansion of informal enterprises including for example access to credit and reliable infrastructure networks, which this dataset cannot adequately address. However, it provides a more accurate measure than sales figures, which are notorious for unreliable estimates in micro- and small enterprise surveys (Zandniapour et al. 2004). A second source of limitations may relate to the representativeness of the datasets applied. Data on current IMEs and their owners from the World Bank dataset does not capture the failed enterprise owners. The Hardy et al. (2013) dataset, on the other hand, may not fully represent all unemployed youth seeking to enter the sector, as the sample is based on those specifically seeking to gain skills through the NAP for self-employment. This may lead to endogeneity concerns when the datasets are compared, which will be explained further in the analysis. Although the above may be important caveats, these are the best available and most recent datasets at the time of writing.

AN ANALYSIS OF THE CAPACITY OF GHANA’S INFORMAL SECTOR FOR ABSORBING UNEMPLOYED YOUTH

Limited expansion of IMEs: The existence of external constraints and barriers to entry

Dividing the World Bank data into different activity sectors by expanding and non-expanding enterprises allows forming a picture of the diversity

and expansion potential of the informal sector. It suggests that most informal activities are not expanding and that external constraints to growth are likely to exist.

Overall, a little over a third of the interviewed enterprises indicated that their enterprise had expanded over the past three years in terms of employees, machinery used, or space occupied. When divided into activity categories (Table 1) it appears that nearly all sectors have a smaller proportion of expanding than non-expanding enterprises. For example, enterprises engaged in manufacturing clothes constitute 12.3% of all informal enterprises of which 35.6% are expanding and 64.4% are non-expanding. Across categories, it seems that only the service sectors, including telecommunications and auto mechanics, have a larger proportion of expanding than non-expanding enterprises. However, they constitute only a small proportion of the overall sample (3.3% and 1.8%, respectively), and may therefore not adequately represent these sectors. In manufacturing activities, furniture and metal works production appears to have close to equal proportions of expanding and non-expanding enterprises and together make up around 10% of the informal enterprises interviewed.

A number of urban trade association representatives confirmed that their individual markets were increasingly facing competition from other formal and informal enterprises. It was, for example, noted by the Ghana National Tailors and Dressmakers Association (GNTDA) representatives that the garment sector overall had seen a decline in demand for traditional African wear due to competition from cheap mass-produced clothing items imported from China. Ghana Hairdressers and Beauticians Association (GHABA) representatives also noted that their members felt pressure from an increasing amount of newly established hairdressing and beauty salons. The general demand for other sectors, including welding and carpentry, was perceived to be higher due to the expansion of the construction sector, creating opportunities for linkages to formal industrial companies. Yet, the expansion was by some still perceived to be a threat to the local products of small shop owners. As noted by a carpenter representative: “Markets are flooded with cheap furniture now—produced in larger factories here in Ghana or imported cheaply from other countries. How can a termite fight with an elephant?” A National Board for Small-Scale Industries (NBSSI) representative added: “Our records indicate that about two out of five microenterprise start-ups succeed in sustaining their

Table 1. Expanding and non-expanding enterprises by informal sector activity

	Proportion of all enterprises	Exp (1)	Non-exp (2)	Diff (1)-(2)
Manufacturing	0.449 (.018)	0.403 (.027)	0.597 (.027)	-0.194***
Baked and processed foods	0.191 (.015)	0.377 (.041)	0.623 (.041)	-0.246***
Clothes	0.123 (.012)	0.356 (.051)	0.644 (.051)	-0.288***
Furniture	0.049 (.008)	0.472 (.084)	0.528 (.084)	-0.056
Metal products	0.044 (.008)	0.462 (.081)	0.538 (.081)	-0.076
Other	0.041 (.006)	0.448 (.094)	0.552 (.094)	-0.104
Services	0.551 (.018)	0.346 (.024)	0.654 (.024)	-0.308***
Selling household goods (retail)	0.248 (.016)	0.313 (.034)	0.687 (.034)	-0.375***
Selling food/groceries	0.130 (.012)	0.253 (.045)	0.747 (.045)	-0.494***
Hairdressing	0.073 (.010)	0.458 (.071)	0.560 (.071)	-0.120
Telecommunication	0.033 (.007)	0.542 (.104)	0.458 (.104)	0.084
Repair of machinery/equipment	0.022 (.005)	0.375 (.125)	0.625 (.125)	-0.250
Auto mechanic	0.018 (.005)	0.615 (.140)	0.385 (.140)	0.230
Other	0.027 (.004)	0.417 (.149)	0.583 (.140)	-0.166
N	724	269	455	724

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: Exp = Expanding, Non-exp = Non-expanding. Source: World Bank (2013).

business. Choked [saturated] markets are a real issue, where duplication—not innovation—is taking place.”

Of course, there may be a number of other factors constraining the growth of IMEs. Current IME owners, of both expanding and non-expanding enterprises, self-reported that their main barriers to growth included access to finance and problems with the electricity supply (Table 2). According to trade associations, reliable access to electricity may in particular be important for expanding enterprises to ensure reliable production or service delivery.

Interestingly, the same barriers were listed by formally registered small and medium enterprises in an earlier World Bank enterprise survey (World Bank 2007) and are typically the main barriers recorded across SSA (Page and Söderbom 2012). Furthermore, legal-administrative issues of IMEs may also be a constraint on further growth and expansion; for example, while 32.4% of current IME owners reported that formally registering their business would attract more customers through issuing receipts, 54.6% hesitated to register their business due to time, fees, and paperwork required (see Appendix 1). These external constraints may together contribute to the lack of growth and expansion of existing IMEs.

Combining the quantitative indications of expanding and non-expanding enterprises in Table 1 with qualitative statements, however, suggests that there may be external barriers beyond more traditional financial and infrastructural concerns, including increasing competition and market saturation. This raises important questions regarding the capacity of the informal sector to absorb new informal enterprises in general and also about the potential for youth to find successful self-employment.

Although external barriers to growth may prevail, barriers to entry in terms of education and relevant experience may also be contributing factors. Interestingly, lack of skills in terms of employees or the owner him/herself was one of the least self-reported constraints in the World Bank survey (see Table 2). However, this was mentioned by trade association leaders as one of the main obstacles to expansion in their respective trades. To investigate this further, a comparison of expanding and non-expanding young enterprise owners (≤ 35 years of age) was made. Table 3 shows that young expanding business owners, on average, have 1.06 years more education than non-expanding business owners, which is significant at the 1% level. Breaking down this result by level of education, the difference appears

Table 2. Self-reported constraints on enterprise growth

	Exp (1)	Non-exp (2)	Difference (1)-(2)
Most reported constraints			
Limited access to finance	0.309 (.038)	0.377 (.030)	-0.068
Electricity supply	0.394 (.041)	0.288 (.028)	0.068**
Limited access to land	0.118 (.026)	0.167 (.023)	-0.049
Least reported constraints			
Access to technology	0.021 (.011)	0.019 (.009)	0.002
Corruption	0.013 (.009)	0.004 (.002)	0.009
Lack of skills	-	0.012 (.007)	-
N	269	455	724

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: Exp = Expanding, Non-exp = Non-expanding.

Source: World Bank (2013).

to be driven by a smaller proportion of expanding owners having had no education at all as well as a larger proportion of expanding owners (42.1%) having achieved secondary education compared to non-expanding owners (31.7%).

Furthermore, 32.7% of expanding business owners completed vocational or technical training as opposed to 21.3% of non-expanding owners, where the difference is found to be significant at the 5% level. By contrast, only 11.4–13.1% of the total young owner sample had any tertiary education, which includes formal public and private technical institutes as well as universities. It is also interesting to note that a significantly larger proportion of non-expanding enterprise owners are women compared to expanding

Table 3. Comparing characteristics of young expanding and non-expanding enterprise owners

	Exp (1)	Non-exp (2)	Diff. (1)-(2)
Age (mean)	30.012 (.341)	29.601 (.283)	0.307
Proportion female	0.429 (.052)	0.633 (.036)	-0.204***
Years of education (mean)	9.439 (.223)	8.376 (.245)	1.063***
Level of education			
None	0.028 (.016)	0.119 (.023)	-0.091***
Primary	0.421 (.048)	0.450 (.035)	-0.029
Secondary	0.421 (.045)	0.317 (.032)	0.104*
Tertiary	0.131 (.033)	0.114 (.022)	0.017
Vocational/technical training completed	0.327 (.046)	0.213 (.029)	0.114**
Occupation prior to enterprise start-up			
Employed in same activity	0.336 (.046)	0.252 (.031)	0.084
Employed in different activity	0.187 (.038)	0.248 (.030)	-0.061
Self-employed	0.196 (.039)	0.277 (.033)	-0.081*
Unemployed	0.275 (.047)	0.203 (.030)	0.072
N	107	202	309

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Note: Exp = Expanding, Non-exp = Non-expanding.

Source: Author's elaborations based on World Bank data (2013).

enterprise owners. This corroborates previous evidence, which has pointed to a strong correlation between gender, low educational attainment, and low productivity IMEs in Ghana (Monk et al. 2009; World Bank 2014).

Overall, there are therefore strong indications that formal education and vocational training matter for dynamic self-employment in the informal sector. Although one should be careful about endogeneity issues, given that higher education could both drive and be the result of business expansion, anecdotal evidence from Ghana suggests that it is very rare for business owners, once established, to seek further formal education (Aryeetey et al. 2014). This was also confirmed by trade association representatives, who explained that current enterprise owners at best further their skills by learning from each other, for example by attending workshops organized by local trade associations.

As suggested by several interviewees, previous relevant work experience may also contribute to the success of an enterprise. This pattern was confirmed in the quantitative data for current enterprise owners, in which, on average, 33.6% of expanding business owners were found to have employment experience in the same activity compared to only 25.2% of non-expanding owners. The reverse is observed for self-employment. Meanwhile, 27.5% of expanding enterprise owners established themselves directly from unemployment, which indicates hope for the informal sector's absorption capacity of current unemployed youth. This latter issue is examined more in depth in the following section.

An important role for formal education and relevant work experience

To further examine the informal sector's potential to absorb urban unemployed youth, a comparative analysis of the characteristics of both current young enterprise owners and those of unemployed youth can be carried out. The World Bank data permit forming a general profile of young entrepreneur owners, while the Hardy et al. (2013) data allow establishing a profile of current unemployed youth seeking to gain skills for self-employment in the informal sector. If current unemployed youth have a profile that resembles current young enterprise owners in urban areas, this would increase our confidence in the sector's potential for reducing youth unemployment. However, it should be emphasized that this comparative analysis is purely a descriptive snapshot of the current situation and faces two important

Table 4. Characteristics of young enterprise owners and unemployed youth

	All young owners (1)		All young applicants (2)	Difference (3) (1)-(2)
Age (mean)	29.719 (.224)	Age (mean)	23.464 (.079)	6.255***
Proportion female	0.565 (.028)	Proportion female	0.652 (.007)	-0.087***
Years of education (mean)	8.742 (.180)	Years of education (mean)	8.256 (.049)	0.486**
Level of education		Level of education		
None	0.087 (.016)	None	0.072 (.004)	0.015
Primary	0.442 (.028)	Primary	0.703 (.007)	-0.261***
Secondary	0.352 (.023)	Secondary	0.213 (.006)	0.139***
Tertiary	0.119 (.018)	Tertiary	0.011 (.001)	0.108***
Vocational/technical training completed	0.255 (.025)	Enrolled in vocational school	0.068 (.014)	
Occupation prior to enterprise start-up		Experience		
Employed in same activity	0.281 (.026)	Experience in wage employment	0.086 (.280)	
Employed in different activity	0.229 (.023)			
Self-employed	0.248 (.024)			
Unemployed	0.216 (.023)			
N	309	N	4749	
<i>Standard errors in parentheses. Source: Author's elaborations based on World Bank data (2013).</i>		<i>Standard errors in parentheses. Source: Author's elaborations based on Hardy et al. data (2013).</i>		

Note: The difference in means test reported in column 3 was carried out assuming the covariance is zero. Differences in means were not carried out for vocational school training and experience variables as these were found to be different in measurement and therefore not directly comparable statistically.

sources of endogeneity. First, the Hardy et al. (2013) baseline may not be a fully representative sample of unemployed youth. The data are drawn from a sample of youth who may already have had issues finding a job and may furthermore have a downward bias in educational attainment, given the targeting of the NAP. Second, the World Bank data on current enterprise owners do not include individuals who have failed at establishing an enterprise and may therefore tend to have an upward bias in educational attainment. With these important caveats in mind, however, these two sources of data represent the most recent and systematic information on individuals both existing and potentially entering the IME sector in Ghana.

Comparing the characteristics of young, informal enterprise owners and current unemployed youth along the dimensions of age, gender, educational background, and experience it appears that lack of formal education and experience may form a particularly strong constraint on youth finding immediate self-employment in the informal sector (Table 4). Current owners appear to be significantly older than current unemployed youth, even when adding a year of practical skills training to the age of the latter group. However, the most interesting finding is that a larger proportion of current young owners have secondary education (35.2%) compared to current unemployed youth (21.3%), where the difference is found to be significant at the 1% level. Although it might not be surprising that most unemployed youth have less secondary education, as the sample was drawn from a program targeting (although not limited to) primary school leavers, the generally higher education levels of current young enterprise owners seems to suggest that there may be a limited absorption capacity for poorly educated youth in the IME sector. Nevertheless, over a fourth of current owners completed vocational and technical training, which the current NAP seeks to supply.

As expected, it also seems to be the case that most young owners have been employed (51%) or self-employed (24.8%) elsewhere prior to starting their business, while less than 9% of unemployed youth seeking self-employment have experience in wage employment. However, nearly 22% of young owners have established themselves straight out of unemployment, which increases the hope somewhat for currently unemployed youth finding employment in this sector.

Indeed, when interviewed about the constraints on self-employment in the IME sector, the level of formal education and experience was stressed by

both trade association and government officials. Regarding the level of education, the regional GNTDA representatives for example emphasized that primary-level school leavers often lack adequate basic numeracy and literacy skills, which are important not only for allowing effective learning during the apprenticeship period but also, upon training completion, facilitate recordkeeping of customers and revenues and the possibilities for applying for business loans. This in turn increases the chances of sustaining a business. One of them noted: “Sure, nothing is stopping this young person from setting up a small shop, but will this person get customers? Within little time, they will return to the streets.” This point was echoed by the director of the Non-Formal Education Division at the Ministry of Education who explained that: “Unemployed youth with lower levels of education often do not succeed in self-employment...because they lack good basic skills essential to convert knowledge into practice.” The national president of GHABA further emphasized: “There will be no demand for the skills of a poorly educated young person. They do not inspire trust in the work they do and their relationship with customers suffers.”

Although formal education was noted to be paramount for successful self-employment, it was also emphasized that specialization and prolonged learning of a skill after apprenticeship completion as a wage worker for the master craftsman or at another enterprise was of almost equal importance. This therefore confirms the existence of microlevel barriers beyond the acquisition of practical skills through apprenticeships. This point was in particular emphasized by the welding and carpentry representatives and practitioners who noted that building experience over time, as a wage employee, is key to setting up a successful business. Interestingly, across all informal trade and service representatives, the lack of adequate technology or capital was rarely mentioned as the main barrier to successful self-employment.

A comparative profile therefore indicates that current unemployed youth do not resemble current young enterprise owners. In particular, levels of formal education in terms of schooling as well as work experience seem to potentially limit the prospects for the informal sector to absorb unemployed youth. Against this backdrop, the skills alone provided by the current NAP might not lead to successful self-employment. Little attention has been paid to these issues despite trade associations raising similar concerns with COTVET.

FINDINGS AND POLICY RECOMMENDATIONS

Taken together, the analysis suggests that there are two reasons to revisit the common assumption that the IME sector will continue to absorb unemployed youth in urban areas and that informal apprenticeship programs sponsored by the government, on their own, will allow unemployed youth to establish themselves in the IME sector. First, most informal sector activities were not found to be expanding overall, facing several macrolevel constraints that limit the growth—and hence the absorptive capacity—of the IME sector. In Ghana, these appear to go beyond the standard financial and infrastructure constraints to include increased competition and market saturation. Second, it also appears that microlevel barriers limit the absorption potential of the IME sector. Lack of formal education, in particular, accompanied by insufficient relevant work experience may be important barriers to current unemployed youth in becoming owners of expanding or non-expanding enterprises. This lends support both to those who have previously perceived formal education as a key premise for building practical skills and transforming knowledge into practice (Rauner and Maclean 2008) as well as to those who perceive the school-skills-enterprise link to be more complex (see, for example, Dabalen et al. 2003; Grierson 1997).

These findings in turn have important policy implications for the design of strategies for the IME sector overall and for government-led skills initiatives for creating inclusive, employment-generating policies in urban areas. To ensure that the sector can continue to absorb labor market entrants, it will need to expand. While remedying infrastructural problems, by allocating workshop plots and improving electricity as well as credit supplies, as advocated elsewhere is part of the solution, it will also be necessary to address the effects of macroeconomic policies for trade on the informal sector given competitive pressures felt by current IME owners (Bacchetta et al. 2009). Regarding the design of informal sector skills-development programs, the Ghanaian government's NAP initiative may need to go beyond solely providing practical skills through informal apprenticeships. Although vocational training is important and relevant, it may not be enough to achieve self-employment in the informal sector. On the one hand, formal education may be an important bottleneck in TVET skills programs aiming to achieve successful self-employment in the urban IME sector. In order to live up to unemployed youth's expectations about the program, it may

therefore be advisable that complementary formal training be offered to poorly educated apprentices in addition to simply financing informal apprenticeships. For example, non-formal education programs, which are a type of second-chance education programs, might be particularly adequate. They provide youth with instruction equivalent to formal education, focusing on essential learning needs and basic skills including literacy, numeracy, oral expression, and problem-solving in informal settings and are often short in length and provided on a part-time basis (Mattero 2010). On the other hand, while formal education should be given high priority, this paper indicates that it may also be necessary to encourage and aid youth in finding placements after completing an informal apprenticeship with the NAP. Although youth are eager to gain immediate self-employment, that may not be a realistic expectation, and the government risks damaging its reputation by promising increased prospects for self-employment immediately after completing the NAP.

Although countries in SSA face different challenges in terms of youth unemployment and IME absorption capacity due to context-specific economic and institutional environments, this paper has suggested that the gap in practical skills should be treated as only one facet of the urban youth employment challenge. A comprehensive approach to tackling the absorption capacity of the IME sector will need to address both macro- and microlevel constraints. As indicated elsewhere and supported by this study, consulting IME associations on the ground and giving them a voice in the policy process may be paramount to developing a relevant and comprehensive strategy (Anarfi et al. 2008). Given that the informal sector might realistically need to provide a short-term solution for SSA cohorts of unemployed youths, effective policies for the IME sector need to be continuously explored. This study has preliminarily indicated that more research in the areas of both macro and microlevel constraints could be interesting and relevant avenues to explore to further investigate and ultimately improve the IME's absorption potential of unemployed urban youth in SSA. In addition, there would also be ample scope for examining constraints that obstruct *keeping* youth in self-employment in the IME sector. While the initial absorption capacity of the IME should firstly be tackled, there may be little guarantee that youth entering the sector will be able to successfully remain self-employed in the longer run.

REFERENCES

- Adams, Avril, Sara Johansson, and Setareh Razmara. 2013. *Improving Skills Development in the Informal Sector: Strategies for Sub-Saharan Africa*. Washington, DC: World Bank.
- African Development Bank (AFDB). 2012. *African Economic Outlook 2012: Promoting Youth Employment*. Paris: OECD Publishing.
- Anarfi, J., Akua Anyidoho, and A. Verschoor. 2008. *The Economic Empowerment of Young People in Ghana*. Report prepared for the World Bank. Washington, DC: World Bank.
- Aryeetey, Ernest, William Baah-Boateng, Charles Godfred, Kim Lehrer, and Isaac Mbiti. 2014. "Ghana." In *Youth and Employment in Sub-Saharan Africa: Working But Poor*, edited by Hino, Hiroyuki and Gustav Ranis. New York: Routledge.
- Atchoarena, David, and Andre Marcel Delluc. 2001. "Revisiting Technical and Vocational Education in Sub-Saharan Africa: An Update on Trends, Innovations, and Challenges." Report prepared by the International Institute for Educational Planning for the World Bank.
- Bacchetta, Marc, Ekkehard Ernst, and Juana Bustamante. 2009. *Globalization and Informal Jobs in Developing Countries*. Geneva: ILO and WTO.
- Baffour-Awuah, Daniel. 2013. "Policy Options for Improving Informal Apprenticeship: Experiences from Ghana." In *Apprenticeship in a Globalised World: Premises, Promises and Pitfalls*, edited by Salim Akoojee et al. Münster: LIT Verlag.
- Bryman, Alan. 2009. "Integrating Quantitative and Qualitative Research: How Is It Done?" *Qualitative Research* 6(1): 97–113.
- Dabalen, Andrew, Helena Nielsen, and Michael Rosholm. 2003. "Labor Markets and Enterprise Training in African Manufacturing." World Bank Working Paper. Washington, DC: World Bank.
- Darvas, Peter, and Palmer, Robert. 2014. "Demand and Supply of Skills in Ghana. How Can Training Programs Improve Employment and Productivity?" Washington, DC: World Bank.
- Fafchamps, Marcel, and Christopher Woodruff. 2012. "Identifying and Relaxing Constraints to Employment Generation in Small-Scale African Enterprises." World Bank Working Paper. Washington, DC: World Bank.
- Filmer, Dean, and Louise Fox. 2014. *Youth Employment in Sub-Saharan Africa*. Washington, DC: World Bank.
- Ghana Statistical Service (GSS). 2013. "Ghana Living Standards Survey 6 with Labour Force Module (GLSS6/LFS): Three-cycle Labour Force Report." Accra: Government of Ghana.
- Government of Ghana (GoG). 2005. "The Council for Technical and Vocational Training Act." Accra: Government of Ghana.
- Government of Ghana (GoG). 2004. "Draft TVET Policy Framework for Ghana." Accra: Government of Ghana.
- Grierson, John. 1997. *Where There Is No Job: Vocational Training for Self-Employment in Developing Countries*. St Gallen, Switzerland: SKAT.
- Hardy, Morgan, Isaac Mbiti, and Jamie McCasland. 2013. Ghana National Apprenticeship Programme Impact Evaluation. Baseline Data.
- ILO. 2014. "Transitioning from the Informal to the Formal Economy. International Labour Conference, 103rd Session." Geneva: ILO.

- ILO. 2013. "The Informal Economy and Decent Work: A Policy Resource Guide Supporting Transitions to Formality." Geneva: ILO.
- Leino, Jessica. 2009. "Formal and Informal Microenterprises." Enterprise Note No. 5. Washington, DC: World Bank.
- Mattero, Minna. 2010. "Second Chance Education for Out-of-School Youth: A Conceptual Framework and Review of Programs." World Bank Working Paper. Washington, DC: World Bank.
- Monk, Courtney, Justin Sandefur, and Francis Teal. 2009. "Apprenticeship in Ghana." In *Ghana: Job Creation and Skills Development. Vol. II. Background Papers, Annex 2. Report No. 40328-GH*. Washington, DC: World Bank.
- National Development Planning Committee (NDPC). 2010. "Medium-Term National Development Policy Framework: Ghana Shared Growth and Development Agenda, 2010–2013. Volume I: Policy Framework." Accra: Government of Ghana.
- National Development Planning Committee (NDPC). 2008. "Medium-Long Term National Development Plan 2008–2015" Accra: Government of Ghana.
- OECD. 2011. "Social Cohesion in Africa." Paris: OECD.
- Page, John, and Maans Söderbom. 2012. "Is Small Beautiful? Small Enterprise, Aid and Employment in Africa." WIDER Working Paper. New York: UNU-WIDER.
- "Educating out of poverty? A synthesis report on Ghana, India, Kenya, Rwanda, Tanzania and South Africa." DFID Researching the Issues Series No.70. London: DFID.
- Rauner, Felix, and Rupert Maclean. 2008. *Handbook of Technical and Vocational Education and Training Research*. Dordrecht: Springer.
- UNESCO-UNEVOC. 2013. *Revisiting Global Trends in TVET: Reflections on Theory and Practice*. UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training. Paris: UNESCO.
- Walther, Richard. 2010. "Building Skills in the Informal Sector." Background paper prepared for the Education for All Global Monitoring Report 2012. Paris: UNESCO.
- World Bank. 2014. "Gender at Work: A Companion to the World Development Report on Jobs." World Bank Working Paper. Washington, DC: World Bank.
- World Bank. 2013. "Ghana Informal Enterprise Survey Data—Implementation Note." Washington, DC: World Bank.
- . 2007. "Ghana Country Profile. Enterprise Survey 2007." Washington, DC: World Bank.
- Zandniapour, Lily, Jennefer Sebstad, and Don Snodgrass. 2004. "Review of Impact Assessments of Selected Enterprise Development Projects." Washington, DC: USAID.

APPENDIX 1

Table A1. Self-reported benefits of formally registering the enterprise

	Exp (1)	Non-exp (2)	Difference (1)-(2)
Access to finance and loans	0.517 (.031)	0.505 (.023)	0.012
Access to raw materials and infrastructure	0.413 (.030)	0.341 (.022)	0.072*
Attracting more customers by issuing receipts	0.338 (.029)	0.310 (.022)	0.028
Fewer bribes to be paid	0.186 (.024)	0.182 (.018)	0.004
N	269	455	724

*Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.*

Note: Exp = Expanding, Non-exp = Non-expanding. Proportions do not add up to 1 because more than one benefit could be listed.

Source: World Bank (2013).

Table A2. Reasons for avoiding formally registering the enterprise

	Exp (1)	Non-exp (2)	Difference (1)-(2)
Time, fees and paperwork	0.565 (.030)	0.527 (.023)	0.038
Taxes to be paid	0.387 (.031)	0.443 (.023)	-0.056
No benefit from registering	0.361 (.029)	0.330 (.022)	0.031
Inspections with officials	0.190 (.024)	0.182 (.018)	0.008
Bribes	0.193 (.024)	0.176 (.018)	0.017
N	269	455	724

Standard errors in parentheses.

** $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.*

Note: Exp = Expanding, Non-exp = Non-expanding. Proportions do not add up to 1 because more than one reason could be listed.

Source: World Bank (2013).

Living Between Desires and Possibilities: Revisiting and Re-envisioning the Self-Help House in the “Consolidated” Low-income Settlements of Lima, Peru

Olga Peek

Department of Architecture, Urbanism and Planning, KU Leuven

ABSTRACT

This paper aims to contribute to the debate on inclusive cities by reflecting upon self-help as a housing strategy in metropolitan Lima and recent struggles for affordable accommodation of second- and third-generation inhabitants in low-income settlements. The evolution of the self-help house is explored through in-depth case studies carried out in the neighbourhood of Pampas de San Juan located in the south of Lima. The study articulates both social and spatial features of homes and looks beyond the three stages of home consolidation that John Turner presented in his model in 1968, showing that many more factors influence the process of home improvement than he originally envisioned.

SIXTY YEARS OF SELF-HELP HOUSING EXPERIENCE IN LIMA

To a certain extent self-help can be seen as an inclusive way of city making, in which the users and the constantly growing, transforming, and adapting homes are shaping the urban environment. However, several decades of lived experience in self-help settlements indicate that a seemingly physical improvement of the built environment goes hand in hand with social

**Image 1: A consolidated self-help house in Pampas de San Juan.
Photo: by the author.**



Image 2: The process of home consolidation. Photo: by the author.



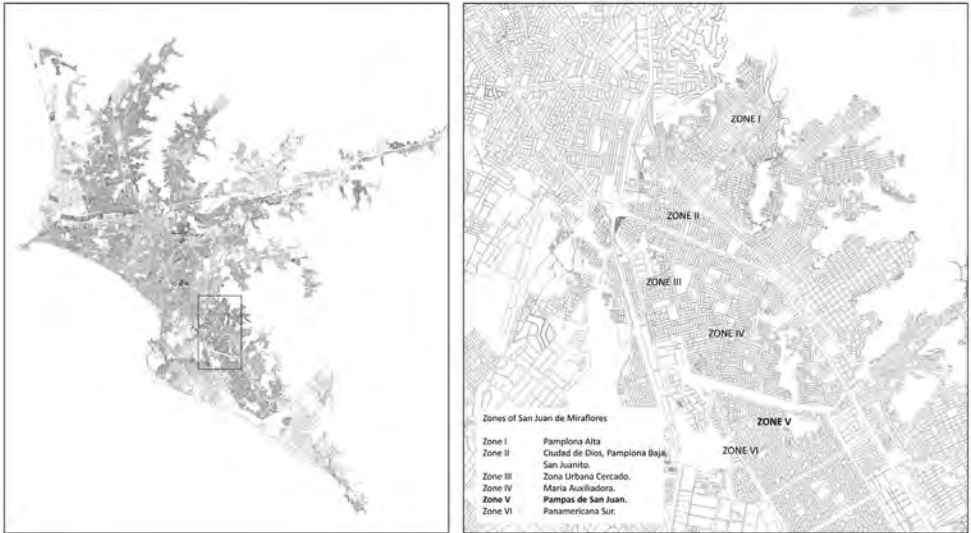
deterioration of the urban fabric wherein second and third generations are facing “new” struggles for affordable and decent accommodation (Ward et al. 2014a). Considering this trend, this paper examines self-help as a housing strategy in metropolitan Lima.

The self-help housing model that originated in the Peruvian context in which Pedro Beltrán promoted *la casa barata que crece*¹ (Gyger 2013; Hordijk 2010, 77; Bromley 2003, 284), and which was later theorized by John Turner (Turner 1968a), has proved a successful strategy in the past. Millions of migrants in search of accommodation in the city constructed their homes in one of Lima’s *barriadas*² and were able to become homeowners (Chambers 2005). However, Turner’s model was also heavily criticized because it allowed for a *laissez-faire* policy and was adopted by governments to segregate low-income groups from inner-city districts, letting people construct their homes without any support on land with low economic and productive value in the urban periphery (Burgess 1982; Ward 1982).

More than sixty years after the formation of the first *barriadas*³ radical urban changes occurred within the context of modernization and democratization in Lima (Matos Mar 1977; 2012). “Old” *barriadas* changed from rural squatter settlements to urban neighborhoods and single-family homes transformed into collective, multigenerational or rental homes (Sakay et al. 2011; Tokeshi et al. 2005). Yet Turner’s projection of how the self-managed process of home improvement would evolve over time was

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- 1 In 1954 architect Belaúnde (who in 1963 was assigned president of Peru and in 1980 got re-elected after the military rule), sponsored by the conservative newspaper *La Prensa*, launched a design competition for low-cost housing. Editor of *La Prensa* Pedro Beltrán closely followed and documented the competition of *la casa barata*. Beltrán, who later became prime minister, founded the National Housing Institute where Turner was employed for a time in 1960. In his housing policies Beltrán promoted *la casa barata que crece* (the cheap house that grows), which was in fact the precursor of the sites-and-services schemes that Turner later advocated (Gyger 2013; Hordijk 2010; Bromley 2003).
 - 2 The term *barriada* was defined by Collier (1976, 18) as: “A residential community formed by low income families in which the houses are constructed in large measure by the residents themselves and which are generally but not exclusively formed illegally.”
 - 3 The first *barriadas* were formed after 1954, when the first massive land invasion took place in the southern “cone” of Lima, known as the invasion of *Ciudad de Dios*. This was described in detail by local anthropologist José Matos Mar (1977), who continued to document spatial, social, and political changes in Lima (Matos Mar 2012).

Image 3: Map of Lima and location of the district San Juan de Miraflores and neighborhood Pampas de San Juan.



envisioned in his three stages model, which stopped at the “completing stage” after twelve years of consolidation (Turner 1968a, 358).

Today more than two-thirds of the urban population live in peripheral low-income settlements and the vast majority of the *barriada*’s founding fathers continue to live in their self-built homes. Families have extended with a second and third generation and in some cases households have extended even further, with both kin and non-kin home sharers who moved in. The diversification process of households that share their home space⁴ often leads to creative solutions; it likewise results in conflicts about the use of space. People developed their own strategies to cope with “new” de-

4 The concept of home space was first developed by Andersen et al. (2012) and later adopted by Viviana d’Auria (2013). In this study the concept is used likewise, as it builds on Turner’s theory of seeing the house as a “process” instead of a finished object incorporating a social layer or “use value” (Turner 1968a). The house is equally seen as an entangled process in which both social and spatial aspects define the quality of the object.

mands for accommodation. As a consequence homes frequently have been subdivided, both horizontally and vertically, into multiple apartments constructed on the same plot.

As longitudinal studies by various scholars had highlighted earlier (Moser 2010; Perlman 2010), it is important to return to study areas in order to understand the changing dynamics of a place over time. Hence it is time to revisit the old *barriadas* to see how the consolidation process went on after more than thirty years of settlement and to get a better understanding of how complexities have evolved across different generations. This study questions to what extent new residential types that occur as a result of home transformations and subdivisions made by diversified households are examples of inclusive pluralism and whether the self-help house is still adjusting to the needs of current users. It is hypothesized that after several decades of dwelling experience the self-help housing model in metropolitan Lima has reached both its social as well as its spatial limits and homes are not always able to adapt to the changing social structures and characteristics of the extended family.

This paper will look at the main factors that influence the process of home consolidation using in-depth case studies in which both social and spatial aspects are articulated. This study aims to renew our knowledge on self-help housing theory and practice and inform policy makers and city planners in the creation of a new generation of housing policies.

METHODOLOGY

The empirical data on which this study is based were gathered during an intensive fieldwork session carried out in 2013 in the *asentamientos humanos*⁵ of Pampas de San Juan, which is part of the city district San Juan de Miraflores located in southern Lima. The site, one of the last vacant areas that remained in Lima, emerged from the late seventies onwards. For data collection, household surveys were conducted incorporating semistructured

5 There are different local terms for Lima's self-help settlements corresponding to how and when they were founded. The settlements, consisting of several *manzanas* or blocks, are defined as *asociaciones de vivienda*, settlements built by organized communities that bought unofficial titles from land speculators, and the later developed *asentamientos humanos*, which started off with squatters who invaded land.

Image 4: Location of in-depth case studies



interviews and closed-ended questionnaires held across three generations in the extended families.

Ten households were documented using in-depth case studies. The detailed study of home space provides for an exploration of multigenerational growth, diversification of households, and user's aspirations in connection with physical aspects of a changing built environment and home transformations. Ward et al. (2014b) described a method for intensive case studies that to a certain extent is comparable to methods used in my own research. Ward incorporates mixed methods and different scales of research, which are crucial in order to better understand and contextualize findings and allow for uncovering additional factors involved in the complex processes of self-help. In this research only in-depth studies were included from which detailed information could later be extrapolated to more general findings.

In order to evaluate spatial and social changes in the neighborhood, these “snapshots” of my own empirical study build upon the longitudinal study of Hordijk (2000) that was completed in the same area, Pampas de San Juan.

The ten cases were selected to present a relevant and representative range in respect to the neighborhood. Divergences, convergences, and a representation of the widest range of consolidation levels were criteria used to select the most viable and interesting material to further develop the analysis. In total thirty-eight residents were interviewed. The conversations took place in the case-study house itself and the majority of the cases are based upon various visits to the family. The data analysis used a visual ethnographic method as the main tool, in which drawings and photography are combined to illustrate the empirical data and evaluate the case study.

REVISITING THE SELF-HELP HOUSE

Revisiting projects and reflecting on original ideas and theories seem to have gained momentum in the discourse on human settlements (Pérez de Arce et al. 2010). Many researchers return to their study area to compare and document changes over time (Ward 2011; Moser 2010; Perlman 2010; Hordijk 2010). These revisits are crucial in order to “test” whether the original theories are still valid. Our understanding and conceptualization of urban life and social change requires constant revision, as transformation does not always turn out in the way the founders envisioned originally. Most significantly, different generations manifest different aspirations.

The first empirical study in Lima that studied the process of home consolidation across several generations was carried out by local scholars (Riofrío and Driant 1987). After fifteen years of settlement, instead of forming new neighbourhoods, the main housing strategy had shifted towards densification of existing homes, though this did not mean the end of land invasions (*ibid.*, 32). The investigation assumed that long-term problems did not affect only the original settlers, since families had already extended with a second and in some cases a third generation. Living in a *barriada* was therefore more than a temporary condition; for many urban dwellers it was becoming (or had become) a permanent lifestyle, which would influence Lima’s overall development.

In Riofrío and Driant’s study, an important issue that the extended family’s second generation confronted was the question of residential mobility. Staying, renting a place somewhere else, or invading new territories were investigated as possible options. The results of the surveys were quite divided.

The majority preferred to remain in the same area, although more than half of this group would favor a place for themselves. In numerous cases the respondents who “chose” to stay said this was because “there was no other solution” (ibid., 121). This already illustrates the gap between the people’s desires and their actual possibility of accessing the housing market.

From longitudinal studies carried out in Mexico, Ward (2011, 468) concludes that the current self-help house in the “innerburbs,” which he describes as part of “a heavily deteriorated fabric,” is no longer adjusted to the users’ priorities and homes are in urgent need of recovery. Furthermore, with growing population densities in consolidated self-help settlements, social problems also increase. In revisits since 2009 high “new” poverty levels were found as well as problems of social insecurity (Ward 2013). Birdsall et al. (2014) identify this group of “new urban poor” as “strugglers” who are not poor by official standards, neither do they belong to the middle class. Within the Latin American context, where absolute gaps between rich and poor grow, the strugglers are at great risk of falling into true poverty (Birdsall et al. 2014).

Hordijk’s earlier study from Lima agreed with Ward’s findings. Apart from the major transformations that Hordijk detected in the built environment, fundamental changes had taken place in society as well. The new generations grew up in a totally different environment than their parents, interest in collective action and community organization decreased, and consumption patterns had changed considerably. Although most children still shared a house with their parents, some of them did manage to procure a house of their own. Second-generation respondents indicated they preferred renting or buying a home to invading land,⁶ showing that housing aspirations of the children are different from those of the preceding generation; as Hordijk (2010, 372) argues, “the new generation aspires to solve through the market.”

6 That there is little interest in invading land can also be explained by radical changes in urban policy in which invasions are less tolerated, the scarcity of land, and the increasing amount of land trafficking and lack of transparency in transactions in which people have risked invading and paying to secure their land only to discover fraud.

FAMILY SIZE, CHANGING HOUSEHOLD COMPOSITIONS, AND HOME CONSOLIDATION

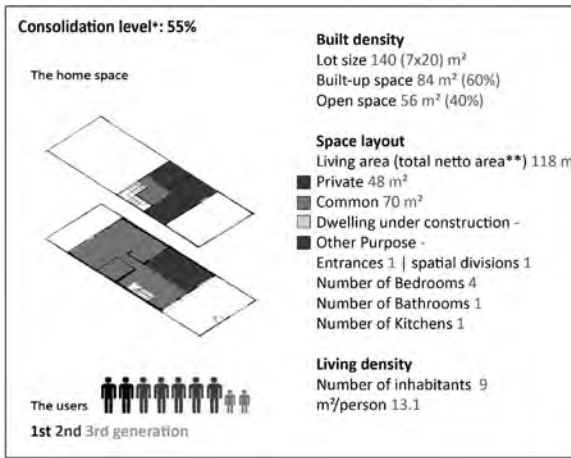
As Gilbert (1999) affirmed, in self-built environments “a home is forever.” There is indeed a common trend of low mobility among the original homeowners. Furthermore it is usual for grown-up children to continue to live in the house of their parents. As Turner (1968a, 358) had already anticipated, in response to family extension and a growing need for privacy of three generations of users, homes have often been subdivided either horizontally or vertically.

The plot may be split up, or individual apartments are constructed in *los aires* and made accessible by means of separate staircases. Turner expected homes to consolidate in line with the growth of the family: when more children were born additional rooms would be added. Williams’ (2005) findings in the low-income settlement Independencia in northern Lima, however, called Turner’s predictions into question, since the size of the family was not necessarily reflected in the development of the house. Large extended families did not always have a developed and improved home and vice-versa. Comparably, the ten in-depth cases in my study of Pampas de San Juan illustrate that in the home development process, a family’s reasoning for making home investments and enlarging the home space diverge, involving many more factors than Turner anticipated. Furthermore, new residential types that emerge as a result of diversification of families do not necessarily follow the aspirations of second and third generations and therefore do not always reflect a form of inclusive pluralism.

THREE FAMILIES, THREE HOMES

To illustrate the recent struggles of new generations for decent accommodation vis-à-vis the complex process of home transformation, several cases are comparatively reviewed below. The first three cases that are discussed (see image 5) all involve a large household that has undergone major changes over the past three decades and show striking differences in the way in which family size and changing household compositions influenced home consolidation.

Image 5: Three families, three homes

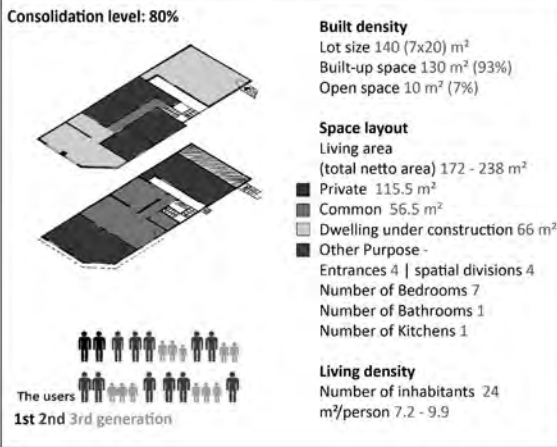


* The consolidation level refers to the physical condition and finishing of the house and was determined through the evaluation of different variables involved in the physical process home improvement (to name some: type of building materials used in construction; number of floors; level and type of interior and exterior finishing of walls, floors, ceilings; number of rooms and spaces under construction)

** The netto area is the actual utilizable area of all constructed floors in which voids and staircases are subtracted from the bruto constructed area (the netto area is the total of private, common and other purpose spaces plus the area under construction).

The Visionary House

The family extended but the house did not follow the same trajectory and remained practically unimproved, in terms of both level of consolidation and housing typology. The family is highly creative and imaginative in envisioning the construction of their house of the future. However little of their dreams is represented in the actual home improvement process. What is left behind is the small visionary house where the large family gathers together in improvised spaces while they keep dreaming about future possibilities.



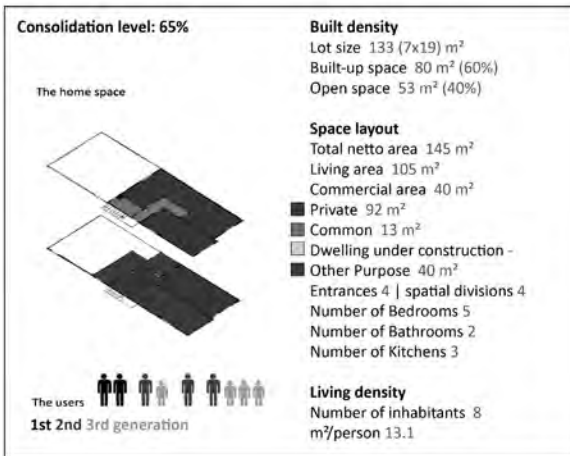
* **The consolidation level** refers to the physical condition and finishing of the house and was determined through the evaluation of different variables involved in the physical process home improvement (to name some: type of building materials used in construction; number of floors; level and type of interior and exterior finishing of walls, floors, ceilings; number of rooms and spaces under construction)

** **The netto area** is the actual utilizable area of all constructed floors in which voids and staircases are subtracted from the bruto constructed area (the netto area is the total of private, common and other purpose spaces plus the area under construction).

The Courageous House

The family extended and the house grew, transformed and adapted in synchrony with the growing family. The house was subdivided into four separate apartments and is highly consolidated in terms of building materials that are used in the construction and levels of finishing of interior spaces. The tremendous household size did not deter the family. With great determination and family cohesion they together built the courageous house. It is one of the most creative results of a full self-managed house in the neighbourhood of Pampas.

Image 5: Three families, three homes (continued)



* **The consolidation level** refers to the physical condition and finishing of the house and was determined through the evaluation of different variables involved in the physical process home improvement (to name some: type of building materials used in construction; number of floors; level and type of interior and exterior finishing of walls, floors, ceilings; number of rooms and spaces under construction)

** **The netto area** is the actual utilizable area of all constructed floors in which voids and staircases are subtracted from the bruto constructed area (the netto area is the total of private, common and other purpose spaces plus the area under construction).

The Progressive House

The family extended with second and third generations, relatives and renters. The house has transformed progressively from a single family home to a multi-family dwelling and beyond comprising four individual entrances. The flexible home adapted to the various sharers and renters that came and lived with the homeowner. Nevertheless this did not result in a fundamental home improvement. The house remained small, is poorly constructed and has a low level of consolidation.

Comparing family trajectories and house trajectories⁷ of case 1 with case 2, we see that both families extended in a similar way. However, the house trajectory is dissimilar. More than thirty years after the parents invaded the desert lands of Pampas, both families extended with a second and a third generation, for a total of nineteen (case 1) and twenty-six household members (case 2). In case 1, only nine members of the extended family officially live in the house, but the children who recently moved out and some of the grandchildren visit their elders nearly every day. In case 2, only two of the ten children moved out; the other eight stayed to live in the parents' house, including grandchildren who were born in the meantime, together forming a twenty-four-member household. The two houses showed very different responses to family extension: while case 1 remained practically untouched, case 2 grew and adapted in synchrony with the family extension and transformed into a collective home. The contrast can be easily spotted from a distance: the two-storey house of case 2 is built of well-finished, durable materials covering the entire plot; case 1 consists of small home spaces made of provisional materials built on only a portion of the plot.

In case 8 (see image 5), the household characteristics changed even more drastically. The family extended not only with a second and third generation, but other kin and tenants joined the household as well, together amounting to nine inhabitants living in the house. The home is being transformed in line with the extension of the household. Although the house is adapting to accommodate newcomers, arranging individual spaces and new entrances to allow for more privacy, it is not substantially improving or consolidating in terms of its physical structure or its use value.

Therefore it can be concluded that family size and changing family composition do not essentially have a direct effect on home transformation. Furthermore, as case 8 and its family trajectories show, a house can adapt to changing household characteristics, but that does not necessarily mean that house transformation and adaptation entails home improvement.

7 The *house trajectory* refers to the process of home consolidation and the changing physical structure of the house over time; *family trajectory* is the evolution and diversification of the household and its settlement patterns.

RAPID CONSOLIDATION, SIMILAR FAMILIES, DISSIMILAR SPACES

The three cases discussed below all involve a rapid consolidation process, although the outcomes show that comparable consolidation processes can result in very different built structures. The households of case 2 (see image 5) and case 10 (see image 6) both extended with a second and third generation that remained living in their parents' house, counting, respectively, twenty-four and ten household members. The residents of case 5 (see image 6) who remain living in the house involve only first and second generations; the two children who started their own families moved out.

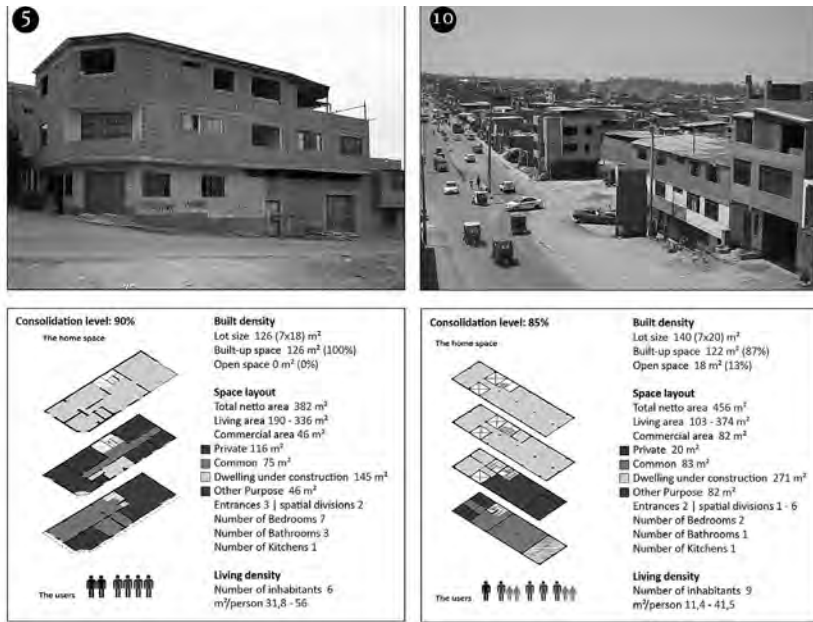
The spatial and physical outcomes of the consolidation process are diverse. Cases 5 and 10 extended similarly, both featuring vertical home enlargements, though one house remains a single-family home and the other is split up into individual apartments. Case 2 did not expand vertically, as have the others, although the spaces are more consolidated in terms of physical improvement and finishing and the house is being subdivided both horizontally and vertically.

In all three cases the majority of the children stayed to live with their parents. Comparing the life trajectories with the house trajectories it can be assumed that an increasing family size to a certain extent does affect house improvement, although other factors such as the commercial and productive values of the house and the future plans of the second generations are also highly influential. While the children in case 2 invested in the house with the intention of remaining to live there, the second generation in case 10 extended the house vertically, considering renting out spaces in *los aires* in the near future (see image 7).

“We are constructing four extra floors upstairs for us, the children, to live in in the future. This way we always have a place to stay here, but we are not sure if all of us will stay. If we leave we will rent out the upper floors to have additional income to pay for my education and to support my mum.” Maria (34)

Case 5 made home extensions without a direct need for more space for the grown-up children at the time of construction. Their additional motivation was to increase their property value before the prices of construction materials rose and to have more space for their workshop. These examples

Image 6: Rapid consolidation, similar families, dissimilar spaces



show that trajectories that homes follow towards improvement are the result of numerous factors in which families make home investments gradually and not always in accord with the extension of the family.

FINANCIAL RESOURCES AND HOME INVESTMENTS

In Turner's (1968a) model an upward trajectory of household incomes was expected after the first stage in which poor young families settled and started to build an incipient house. This would mean that in a self-managed process of home improvement people would automatically invest in and improve their home: if income levels rose, the home would develop in synchrony.

It is indeed true that, when household incomes increase, the development and improvement of the dwelling is likely to be accelerated, although Turner did not make the important distinction between available financial

Image 7: Home transformation and the construction of new apartments in 'los aires.' Photo: by the author.

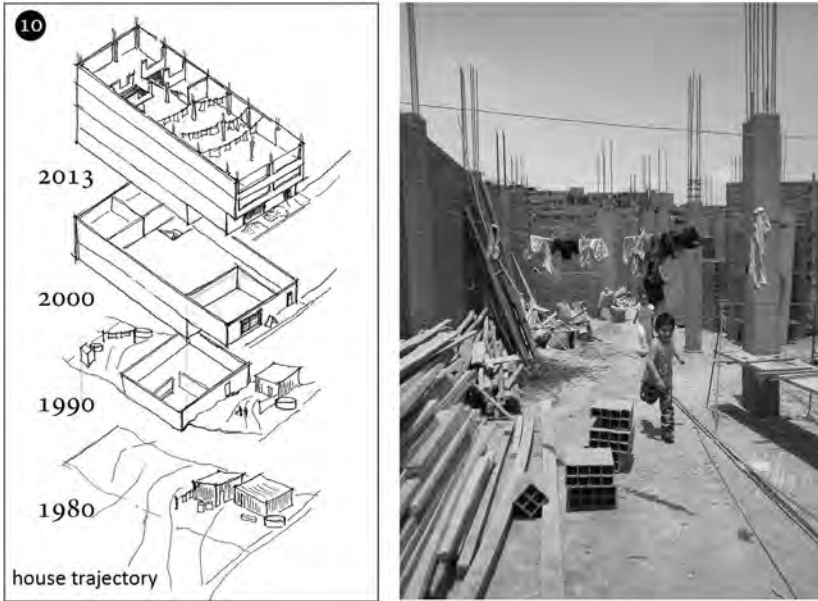


Image 8: Workshop in home space. Photo: by the author.



resources and the amount people are willing to invest; what Gilbert and Varley (1990, 93) called “the share of income people are prepared to dedicate to housing.”

In Guayaquil, Moser (2010, 198) observed major differences in the way in which parents and children invest in home improvement. While for the first generations the house is an important asset to ensure other assets, when second and third generations come into the picture, that is less the case. They are primarily concerned with finding jobs, getting an education, and marriage.

Limanean architect Juan Tokeshi (Tokeshi et al. 2005, 91) portrayed home construction as a progressive process made through the emotional commitment of a family. Homes consolidate and capital is invested gradually by the users. This sometimes occurs rapidly when there is suddenly money available and the will to invest, whereas on other occasions home improvements are long in coming.

In my analysis of the capital that is invested (looking at who is investing in the house, how, and why), a wide range of home investment patterns can be found. The resources range from personal earnings and savings to bank loans or additional income. In only one of the ten cases did the family receive financial support from a government program.

REMITTANCES⁸

Unlike what some other empirical studies have exposed,⁹ in Pampas de San Juan remittances were rarely used for home construction in the *asentamientos humanos*. In none of the ten in-depth case studies were remittances used, and among the neighborhood residents interviewed only a few knew anyone whose family members had migrated and sent money back home to improve the house.

Luisa is the daughter of neighborhood founders who have passed away; she now owns her parents' house. She lived and worked in Venezuela for

8 Remittances are amounts of money that are sent back 'home' earned by family members who migrated.

9 For example, in the study Williams (2005, 98) completed in Independencia, Lima, 30% of the cases used remittances sent home by second and third generations to make improvements in the house.

eight years. Nonetheless Luisa explained that the money she earned abroad was just enough to cover her expenses there. When she came back home to Lima, she had no savings left to invest in the house.

In Isabel's case, her sister bought a plot nearby in 1994 and used remittances in the home construction. They demolished the house of the previous owners and built a completely new one. The entire family moved to Spain in 2006. They rented out the house after they migrated. Isabel, who lives one block down the street, takes care of the house now and makes arrangements with the renters. With money her sister sends home from Spain, they improve the house little by little to make it suitable for renters.

“My sister did not invade, she bought the land. Before there was a family with a lot of problems living here. They left and put the lot up for sale. I told my sister and she bought it in 1994. In recent years we made some changes to the house, we finished the living spaces and put in a new kitchen, but we did not extend the house further after my sister left. . . . My sister asks 400 soles for the rent for the whole house; that's not much. We live in an area that is still, let's say, *peri-urbana*. In San Juan the rents are much higher; they charge you in dollars.” Isabel (53)

COMMERCIAL SPACES

It is common in Lima's low-income settlements for a house to have an added commercial or productive value used to generate additional income from small businesses, shops and workshops (see image 8), a primary school, community kitchens, et cetera. These spaces are of great significance for the user. As Tokeshi et al. (2005, 91) explain: “the potential for economic use of the property has an important added value for the family that makes it unlikely that they would want to sell the property or part of it.”

The possibility for economic activity that Turner also put forward as a great potential can therefore still be seen as one of the advantages of self-help housing.

RENTERS

The growing demand for rental accommodation was already included in Turner's three-stages model (1968a). In 1992 Gilbert and Gugler (1992, 128) spotted similar trends in Latin America: "While the richer families obviously contribute to the economy of the *barrio*, the poor may be an important source of income for the rich. For it is an undeniable fact that as settlements become older and consolidate, the proportions of renters increase; owners deliberately extend their houses to accommodate renters, thereby increasing their income."

Although the trend of renting out spaces can vary across different countries (Ward 2011) in Pampas de San Juan non-kin renters were not frequently included in surveyed households. In the case of Justina's progressive house (case 8, see image 5), the household was comprised of a combination of first, second, and third generations, other kin paying rent, as well as non-kin renters.

Furthermore homeowners were often not keen to rent out spaces to strangers, because they "did not want problems." Only three of the ten families considered the option of renting out spaces to unknown tenants in the near future. Families were more open when it came to taking in relatives. The majority expressed that if the opportunity arose, they would accommodate kin as tenants.

HOME INVESTMENTS: A SECOND GENERATION TAKING OVER

For most of Pampas' families the economic situation improved on account of additional household income from second generations, a common trend that was observed earlier by Hordijk (2010) and Tokeshi et al. (2005).¹⁰

In nine of the ten cases in my study, children of original homeowners made financial contributions to the household. Sometimes this money was used to make home improvements, either investing in the house directly or indirectly by paying rent that subsequently was invested in the house by

10 In the studies he completed in Villa El Salvador, Tokeshi et al. (2005) found that in most cases the children were the ones who extended their parents' house. In studies Hordijk (2010) completed in Pampas de San Juan, two-thirds of the children contributed to the household income.

their parents. In the other case the money was used for basic living expenses or material goods.

“I am really glad with the house as it is today, thanks to the children who supported my husband and me. They invested most in the house. With their money we were able to build the second floor and improve the kitchen and living room downstairs. Our lives have become much better in many ways. There were times when it was really hard to make ends meet, especially with ten children.” Marta (69)

“I am supporting my mum and dad in their daily living expenses by paying the electricity and water bills, and I bought them a washing machine and a refrigerator. My salary is not that big to contribute to improving the house. Apart from that, the kids come first.” Eva (30)

“Last year I started paying rent; before that I kept all my income for myself. I now see that in this way I can help my mother and sometimes I buy her things for the house, like that dining table I bought her for Christmas.” Diego (23)

HOME OWNERSHIP

Many first-generation residents in low-income settlements, who now own a house, lived before in rental accommodation often shared with other kin in Lima’s congested inner city (Turner 1968b). Gilbert and Gugler (1992) saw renting as a temporary stage prior to home ownership, since renters seemed to transition to homeowners over a period of time. The longing to become a homeowner, even if it meant invading land in the urban peripheries that lacked all kinds of services, mainly came out of a desire to obtain a property that parents could pass on to their children (Ward 2011; Riofrío and Driant 1987). Although things have changed for the new generation, their future housing career highly depends on the possibilities they have to improve, extend, and transform their parents’ house.

New problems arise along with the changing characteristics of households. Over the last three decades all homes in Pampas de San Juan have

obtained individual land titles, but internal home subdivisions are never reflected in official property rights. Furthermore, titles are registered in the name of first-generation owners. That means that actions undertaken by second or third generations, who frequently take over the home improvement from their parents, are based on a strong relationship of trust. Nevertheless, in many cases, not having clear ownership did not stop children from investing in the house (such as in cases 2 and 10).

FUTURE ASPIRATIONS AND SOCIAL CONSUMPTIONS NORMS: STAYING OR LEAVING?

The process of home consolidation is highly dependent on the aspirations of the second generation. Their plans and the priority they give to home improvement are the main factors that will eventually speed up or slow down the development of the house. Logically this also depends on the resources the children have and make available.

It is clear that if the children do not intend to stay in the house they are less willing to invest in it directly, although there were cases in which the children left, but did invest in the house. Therefore home investments are often not just related to a direct use value; the second generation also sees an exchange value in their parent's property, increasing the value of what will be their inheritance in the future. More importantly, this issue has to do with the fact that these children "decided" to stay; since there were no other solutions for them on the housing market, they would "make the best out of what they have." It is important to mention another important factor that made second generations not want to move to other parts of the city: their attachment to their neighborhood, the place where they grew up.

Of the twenty-two second-generation respondents, the majority were optimistic about their home situation, although many would prefer to have more space in the future, more privacy, and some would like to have a house for themselves. Almost all of the respondents consider a house for themselves as something impossible in Lima and many second generations had a clear understanding of their possibilities on the current housing market there. Hence it can be concluded that a new era has dawned in which cultural models are changing and the second-generation is settling for less. Whereas their parents' aspiration was to become homeowners, the second

generation seems to have gotten used to the idea of living in an apartment or even a room.

“Looking at my own housing situation, the best would be constructing my own house for me and my children, but if we are realistic that is just impossible in Lima these days. Invasions are now over, there is no land available anymore, and I would not want to live all the way up the hillsides. It is too far and too dangerous. The problem is that rents are really high. Lima has to grow vertically from now on.” Maria (34)

“It would be convenient to have a bit more space or a lot for my own family. Now we live with the five of us in a single room. But all the land has been taken; to buy a piece of land is just too expensive and invasions are just not very common anymore.” Amanda (37)

CONCLUSIONS

Reflections on the self-help house and its consolidation process over several decades and across three generations of inhabitants illustrate both divergent and convergent tendencies, with most users substantially transforming, extending, and improving their homes. The self-help house to a certain extent has a continued use value as well as a symbolic value for the second and third generations, who prefer to remain living in the neighborhood where they were born. Correspondingly, the houses have great potential to integrate productive and commercial spaces, which make an important contribution to household income and make it unlikely that the house will be sold. Nevertheless the process of home transformation is not always aligned with family extension trajectories and does not always follow the demands of all its users.

What Riofrío and Driant (1978) already showed in the early stages of what they described as “the reproduction of the *barriada*” is that the house could simply not adapt as fast as the family extended. More than twenty-five years later Tokeshi et al. (2005) showed that although the house extended and grew tremendously, every house and family differs greatly from

each other. A home could grow and extend while the number of inhabitants was in fact decreasing. In general, however, many houses now accommodating various generations lack space and face serious structural problems or will do so in the near future. The new generation is trapped in living situations that often are not real choices because other housing opportunities are beyond their reach. Furthermore the self-help house followed a model of a single-family rather than a multifamily house, meaning that processes of housing transformation undertaken by the new generations in order to create more privacy will entail extra costs.

This study questioned whether the self-help house can still be seen as an inclusive way of city making and a space where multiple generations can find decent accommodation according to their demands and necessities. From empirical findings of this research it became apparent that aspirations across different generations of low-income urban dwellers have changed considerably.

Along with changing modes of consumption, land prices have risen incredibly and land is usually too expensive and not accessible for the majority. The rental prices of apartments on the formal market have also risen and are not affordable.

What remains in their housing possibilities is rental accommodations on the informal market, but the second generation of Pampas' *asentamientos humanos* were in general not so keen on informal renting and sharing a home with strangers.

Although the aspiration to acquire a house of one's own is sometimes still there, the children of the original invaders have also started to realize that in contemporary Lima this is no longer a real option; hence, they settle for less, improvising a space in the house of mum and dad. Whereas the first generation bore the struggles of invasion and lack of services in order to obtain homeownership, now second-generation members are prepared to pay the price of living in multifamily houses or small rooms for the promise of one day being able to own (a share of) it.

It is crucial to renew empirical knowledge of consolidated low-income settlements in the innerurbs of Latin American cities, in what according to Ward et al. (2014a, 1) is now a "blind spot" in housing policy agendas. In the meantime, as a result of the many mismatches that are found in Lima's housing system, the new generations continue to live between their desires and the possibilities.

REFERENCES

- Andersen, Jørgen Eskemose et al. 2012. *Home Space: Built Environment Study*, report of research programme Home Space in African Cities, School of Architecture, Copenhagen, School of the Built Environment, Heriot-Watt University / Edinburgh School of Architecture and Landscape Architecture. <http://www.homespace.dk/>.
- Birdsall, Nancy, Nora Lustig, and Christian J. Meyer. 2014. "The Strugglers: The New Poor in Latin America?" *World Development* 60:132–46.
- Bromley, Ray. 2003. "Peru 1957–1977: How Time and Place Influenced John Turner's Ideas on Housing Policy." *Habitat International* 27(2): 271–92.
- Burgess, Rod. 1982. "Self-Help Housing Advocacy: A Curious Form of Radicalism. A Critique of the Work of John F.C. Turner." In *Self-Help Housing: A Critique*, edited by Peter M. Ward, 55–97. London, Mansell.
- Chambers, Bill. 2005. "The Barriadas of Lima: Slums of Hope or Despair? Problems or Solutions?" *Geography* 90 (3): 200–24.
- Collier, David. 1976. *Squatters and Oligarchs: Authoritarian Rule and Policy Change in Peru*. Baltimore: Johns Hopkins University Press.
- D'Auria, Viviana. 2013. Research Project: Building the City from Home Space. Faculty of Social and Behavioural Sciences, Governance and Inclusive Development, UvA, Amsterdam. <http://www.uva.nl/en/about-the-uva/organisation/staff-members/content/d/-v.d.auria/v.d.auria.html>.
- Gilbert, Alan. 1999. "A Home Is Forever? Residential Mobility and Homeownership in Self-Help Settlements." *Environment and Planning* 31:1073–91.
- Gilbert, Alan, and Josef Gugler. 1992. *Cities, Poverty and Development: Urbanization in the Third World*, 2d ed. Oxford; New York: Oxford University Press.
- Gilbert, Alan and Ann Varley. 1990. "Renting a Home in a Third World City: Choice or Constraint?" *International Journal of Urban and Regional Research* 14 (1): 89–108.
- Gyger, Helen. 2013. "The Informal as a Project: Self-Help Housing in Peru, 1954–1986." PhD dissertation, Graduate School of Arts and Sciences, Columbia University.
- Hordijk, Michaela. 2010. "Nuestra Realidad es Otra: Changing Realities in Lima's Peripheral Settlements: A Case Study from San Juan de Miraflores." In *The Production, Use and Dissemination of Urban Knowledge in Cities of the South*, edited by V. Brunfaut et al., pp. 361–74. Brussels: N-AERUS.
- Hordijk, Michaela. 2000. "Of Dreams and Deeds: The Role of Local Initiatives for Community-Based Environmental Management in Lima, Peru." PhD dissertation, University of Amsterdam.
- Matos Mar, José. 2012. *Perú: estado desbordado y sociedad nacional emergente*. Lima: Centro de Investigación Universidad Ricardo Palma.
- Matos Mar, José. 1977. *Las barriadas de Lima*: Lima: IEP.
- Moser, Caroline. 2010. *Ordinary Families, Extraordinary Lives: Assets and Poverty Reduction in Guayaquil, 1978–2004*. Washington, DC: Brookings Institution Press.
- Pérez de Arce, Rodrigo, Esther Jacobs, and Viviana D'Auria. 2010. "Dwelling Practices Informing Urbanism / Urbanism Informing Dwelling Practices." In *Human Settlements: Formulations and (re) Calibrations*, edited by Viviana D'Auria et al., 113–27. Amsterdam: SUN Academia.

- Perlman, Janice E. 2010. *Favela: Four Decades of Living on the Edge in Rio de Janeiro*. Oxford; New York: Oxford University Press.
- Riofrío, Gustavo, and Jean-Claude Driant. 1987. *¿Que vivienda han construido?: nuevos problemas en viejas barriadas*. Lima: Centro de Investigación, Desarrollo y Asesoría Poblacional.
- Sakay, Claudia, Paola Sanoni, and Toshihiro Hanazato. 2011. "Rural to Urban Squatter Settlements: The Micro Model of Generational Self-Help Housing in Lima-Peru." *Procedia Engineering* 21:473–80.
- Tokeshi, Juan, Mario Zolezzi, and Carlos Noriega. 2005. *Densificación habitacional: Una propuesta de crecimiento para la ciudad popular*. Lima: Desco.
- Turner, John F. C. 1968a. "The Squatter Settlement: An Architecture That Works." Architectural Design, Architecture of Democracy. <http://www.communityplanning.net/JohnTurnerArchive/pdfs/ADAug1968SquatterSettlement.pdf>.
- Turner, John F. C. 1968b. "Housing Priorities, Settlement Patterns, and Urban Development in Modernizing Countries." In *Journal of the American Institute of Planners* 34 (6): 354–63.
- Ward, Peter M. 2013. *Housing Rehab for Consolidated Squatter Settlements in Latin America's 'First Suburbs': New Policy Approaches from LAHN in Preparation for UNHABITAT III 2016*. The Wilson Center Comparative Urban Studies Project, Washington D.C. www.lahn.utexas.org/meetings.
- Ward, Peter M. 2011. "Self-Help Housing Policies for Second Generation Inheritance and Succession of The House that Mum & Dad Built." *Habitat International* 35 (3): 467–85.
- Ward, Peter M. (ed.) 1982. *Self-Help Housing: A Critique*. London: Mansell.
- Ward, Peter M., Edith Jiménez Huerta, and María Mercedes DiVirgilio. 2014a. *Housing Policy in Latin American Cities: A New Generation of Strategies and Approaches for 2016 UN-HABITAT III*. London; New York: Routledge.
- Ward, Peter M., Edith Jiménez Huerta, and María Mercedes DiVirgilio. 2014b. "Intensive Case Study Methodology for the Analysis of Self-Help Housing Consolidation, Household Organization and Family Mobility." *Current Urban Studies* 2:88–104. Retrieved from <http://www.scirp.org/journal/cus>.
- Williams, Susana M. 2005. "Young Town Growing Up: Four Decades Later: Self-Help Housing and Upgrading Lessons from a Squatter Neighborhood in Lima." Masters thesis, Massachusetts Institute of Technology.

Informal Sector Employment, Industrial Clusters, and Urban Poverty in Africa: A Lagos Case Study

Oyebanke Oyelaran-Oyeyinka

*Urban Planning Department, Graduate School of Architecture,
Planning and Preservation, Columbia University*

ABSTRACT

Industrial clustering is acclaimed to improve firm-level productivity. Less researched however, is its impact on improving the living standards of informal sector workers. Using original data from the Otigba information and communications technology cluster in Lagos, Nigeria, and methodological techniques including survey questionnaires, interviews, archival research, and statistical analysis, this study seeks to address this issue. Findings reveal that: informal sector workers face different types and intensities of vulnerabilities; clustering raises the living standards of workers compared to non-cluster based firms; and informal institutions based on social and kinship ties fill social protection gaps left by absent formal ones.

INTRODUCTION

In an increasingly urbanizing world, formal as well as informal workers in cities are exposed to various vulnerabilities such as unemployment and rising costs of living, while small and medium enterprises (SMEs), which tend to be the predominant employers in the industrialization process, equally face a hostile and disabling business environment. In African cities, many inhabitants of and migrants to urban areas are unable to find

formal sector jobs while existing infrastructure is consistently inadequate in sustaining the unplanned-for and burgeoning population. Many thus resort to creating their own jobs and subsisting on income from the informal sector. Using the case study of informal sector work in Lagos, Nigeria, Africa's largest city with a population of 21 million (Kaplan 2014), I probe the extent to which industrial clustering helps to improve the living standards of informal sector workers. Furthermore, I ask what institutions and policies currently exist that improve or impede the productivity and livelihoods of workers in urban informal economic agglomerations. Based on research findings, recommendations are provided on how existing institutions and coping mechanisms can be improved to maximize the benefits that can be derived from this pertinent work area.

The study draws on original research data from the Otigba information and communications technology (ICT) cluster in Lagos, a cluster that lies on an informal-to-formal continuum. It employs several methodological techniques including survey questionnaires administered during several field visits, formal and non-formal interviews, archival research, and statistical analysis. First, the findings reveal that informal sector workers face different types and intensities of vulnerabilities. Second, they make a strong case for firm agglomeration as firm clustering promotes not just firm-level productivity but also raises the living standards of workers compared to non-cluster based firms. Third, they show that in the absence of formal social protection institutions, informal institutions based on social and kinship ties exist to fill this gap; they help to penetrate the labor market and provide employment, monetary, and non-monetary benefits like housing, transport allowance, feeding allowance, and apprenticeships to workers, all of which helps to improve their living standards.

The overlay between industrial clustering, informality, as well as poverty alleviation is considered in the next section. After that, I describe the data, methodology, and the case study used in this paper. Following this is a discussion of the results based on empirical data from the Otigba case; the final section provides policy recommendations.

THE INFORMAL ECONOMY, POVERTY ALLEVIATION AND INDUSTRIAL CLUSTERS

It is increasingly recognized that not only is employment important, but the nature and quality of employment are equally so. This is evident within the international community with the addition of target IB in 2008, which seeks to achieve “full and productive employment and decent work for all, including women and young people” to the Millennium Development Goals (Sparreboom and Albee 2011, 2). The International Labor Organization’s (ILO) Decent Work Agenda itself has “four strategic pillars” that encompass: “full and productive employment, rights at work, social protection and the promotion of social dialogue” (ILO 2012, 7). Indeed, the nature of an individual’s work does impact various aspects of life including access to basic amenities, work-place benefits, social networks, relationship with family, friends, spirituality, health, self-esteem, and general life outside the workplace.

The ILO (n.d.) highlights that “half to three quarters of all non-agricultural employment” in developing countries are in the informal economy. Workers in the informal economy are not necessarily “a residual comprised of disadvantaged workers rationed out of good jobs”(Maloney 2004, 1159). On the contrary, in both developed and developing countries, individuals might opt to become self-employed or choose informal economy work for reasons such as flexibility, and as a safety-net while they are in-between jobs. However, concern arises due to some characteristics of informal sector employment including “lack of protection in the event of non-payment of wages, compulsory overtime or extra shifts, lay-offs without notice or compensation, unsafe working conditions and the absence of social benefits such as pensions, sick pay and health insurance” (ILO n.d.). In most cases of informal work, there sometimes fails to exist a clear relationship between the government, the organization and the worker (Srinivas 2009), where employees can receive benefits from the workplace, i.e. are employer dependent (Srinivas 2010), and workplace benefits for labor can be negotiated with employers through trade unions.

Again, much of informal employment work is within the SME category, and SMEs find it difficult to access formal credit (Organisation for Economic Co-operation and Development. 2013), and might be unable to provide their employees certain benefits such as health, long vacations, and

pensions, among others. They are also more vulnerable to economic crisis and are the first to shut down when a crisis occurs.

Research however shows that the clustering of firms can help to mitigate some of the constraints that SMEs face. An industrial cluster is defined as a “sectoral *and* spatial concentrations of firms” (Schmitz and Nadvi 1999, 1503) for the purpose of this paper. These constraints can be understood as spatial and industrial isolation, that is the distance from the assets—economic (credit facilities), social, political (ability to influence decisions affecting them), technological—that are required for productive industrial processes. Levitsky (1996, 10) recapitulates “[s]tudies of recent years have led some researchers to the conclusion that it may not be the size as such that is the real cause of the weakness but the isolation of small firms.”

Drawing from the literature, we find anecdotal evidence that industrial clusters do have the potential of eradicating poverty by reducing this industrial isolation that SMEs in developing countries face (Mano et al. 2011; Weijland 1999). Clustered firms can also improve their competitive advantage because they are able to specialize, cooperate, and be flexible; that is, they can concentrate their often limited resources on their best and core competencies. Through cooperation, they can “accentuate their specialization and compensate for any weakness,” (Bianchi et al. 1997, 9) while being flexible in their level of production by outsourcing or subcontracting to other firms. They are also able to adapt to different types of production modes by producing a diversity of products, making them according to the specificity of the buyer (Bianchi et al. 1997) or changing their product line entirely if need be. In essence, the division of labor that occurs within clusters allows small firms (measured by capital and/or number of employees) to grow by taking “small and riskable” steps (Schmitz and Nadvi 1999, 1506).

Furthermore, the more efficient and dynamic firms have the propensity to be more productive, and therefore hold greater possibilities for workers to increase their income and improve their well-being. An example of a successful case is the leather shoe cluster located in the Sinos Valley in Brazil (Schmitz 1995). Between 1970 and 1990, Brazil’s share of world exports in leather shoes increased from 0.5% to 12.3%, the increase largely attributable to the cluster of firms in the Sinos Valley, which by 1991 was exporting nearly 100 million pairs of shoes a year, and earning almost US\$ 900 million in foreign exchange. Another example is the surgical instrument-making agglomeration around the town of Sialkot in Pakistan. In

1997, the cluster accounted for 20% of world exports, making Pakistan the second largest exporter of surgical instruments after Germany (Institute of Development Studies 1997). However, not all clusters end up being successful, and as a cluster upgrades, there may be winners, losers, and unequal outcomes. Nadvi and Barrientos (2004, 43) commented, “clusters are a part of a dynamic process of industrial development. As they evolve winners and losers emerge. Thus, we find that particular firms, producers and workers can gain from the dynamics of clustering, while others are at risk of being squeezed.” Some clusters might also have certain disabling qualities, e.g. weak labor market pooling and increased rents can ensue as the geographical space becomes saturated. Indeed many of Africa’s clusters remain in the low-skill, low-productivity category, although there are a few dynamic ones (McCormick 1999).

In the literature on developing countries, I have not found systematic case studies of the role of industrial clusters in poverty eradication. Nadvi and Barrientos (2004, 2) acknowledge the dearth of such studies in both developed and developing countries and the need for studying the interrelationship between poverty alleviation and industrial clusters:

[d]espite the progress made on academic and policy research on industrial clusters, poverty concerns tend to be ignored in much of the cluster literature. Instead, the focus is on the potential economic gains of clustering, in particular the ways in which clustering enhances competitiveness and promotes growth. There is an implicit assumption that such growth translates into rising levels of employment and incomes, with improving conditions and standards for labor engaged in clustered SMEs. Yet, for the most part, such issues are rarely explored. In particular, relationships between clustered firms and workers are insufficiently analyzed.

How then does clustering lead not only to economic growth, but also to poverty alleviation and improved well-being? How can gains of clustering and the benefits of localization be transformed into gains in human development? In particular, why and how do some firms pass on certain kinds of benefits to workers in ways that improve employees’ welfare? Can and should the workplace become an avenue for providing social benefits for workers? Similarly, what motivates private sector firms, which tend to

be the main employers of labor in developing countries, employing nine out of ten of the workforce (World Bank 2013), to pass on benefits to their workers in these situations where formal institutions of social protection are weak, and national social policies are nonexistent or unenforced, or do not extend to those in the informal economy?

DATA AND METHODOLOGY

In order to demonstrate if and under what conditions productive industrial clusters can help alleviate poverty and improve living standards, I use the case of the Otigba information and communications technology cluster in Lagos, Nigeria, also called Otigba or Computer Village. The study adopts several methodological techniques, including the use of survey questionnaires, archival research, and formal and non-formal interviews. Although a single core case study was used, research drew on both primary and secondary data, and was complemented and enriched through secondary literature.

Otigba was chosen as an appropriate case for several reasons. First, preliminary investigations helped to corroborate the choice of the selected case study. Initial site visits were made to the Kamakunji metalworks cluster in Nairobi, Kenya (which was originally under consideration for this study), and Otigba. In comparison to the former, Otigba had more dynamism and variability of firms and workers to define and organize this study. As opposed to many African clusters characterized by low skill, and employing low-technology manufacturing techniques, Otigba employed both low- and high-skilled labor, had high prospects of further upgrading, possessed necessary technological dynamism, and seemingly held the potential for wealth generation and poverty alleviation. A subsequent pilot study at Otigba provided persuasive evidence that it had a positive impact on living standards. In addition, the cluster had a *mélange* of Nigeria's ethnic nationalities, all with different approaches to business, learning, and collaborative behavior.

Second, the structure of the industry in Otigba was highly heterogeneous, comprising small, medium, and large firms rendering different services with ownership structures that were highly diverse as well. This variability further argued for the choice of the cluster, as it would contribute towards understanding how different size firms with varying types and levels of skills, capabilities, and policies led to diverse living standard outcomes for their workers.

In addition, although the literature places the state as a central actor in fostering cluster growth, the cluster itself had experienced poor state support, while formal institutions for social protection for informal workers tended to be weak. It therefore served as a good case to examine how firms passed on benefits to workers in the absence of institutional regulations that mandated and enforced the delivery of social protection to workers.

Surveys were used in the study to enhance a general understanding of the Otigba cluster and were administered to both employees and employers. Two types of questionnaires were constructed and administered—one targeted to employees and the other to owners/CEOs and managers of the companies. This paper will highlight results from the employee surveys. The questionnaires enabled respondents and their firms to be anonymous by not requiring their names or the name of their firms. Given the sensitivity of some of the questions, i.e., on poverty, living conditions, and firm-particular data, anonymity was given to encourage truthfulness in responses. Initial interviews and a pilot survey were designed to feed the development of the final survey questionnaire. A total of forty questionnaires were analyzed from the pilot survey. The initial site visit was followed by a separate visit in March 2012 during which the pilot survey was carried out. The pilot survey was then improved upon and changed to reflect the more specific concentration of the study. Questions that were not properly answered or that did not contribute to the analysis in the pilot survey were removed or modified.

Subsequent field research was carried out in July/August 2012, and from January to the beginning of March 2013. During these latter visits, data were collected from primary and secondary sources using interviews, survey questionnaires, and general observations of the cluster. Archival research to collect old and relevant newspaper articles on the cluster and poverty in Nigeria was also carried out. Informants for this study included ICT and non-ICT business owners and employees within the cluster; business owners who had ICT businesses, but were not within the geographical location of the cluster; government officials; bank employees; and others who had information and knowledge on the topic. The cluster was categorized in terms of the different types of firms based on products and services rendered. Interviews were then sought with firms that fit into these different types, as well as some of the bigger players in the cluster and ICT industry.

In all, a total of about sixty formal interviews and informal conversations took place, generally face to face. The final surveys were distributed within Otigba, and as well to two big players in the industry who were located outside of the cluster. In addition, survey questionnaires were also disseminated via email to members of the Computer Society of Nigeria, and as well at the Lagos and Ijebu-Ode chapter meetings of the society. The target number of questionnaires to be retrieved was between 150–200, but a total of 257 questionnaires—101 CEO/Management and 156 employees—were retrieved and examined using basic descriptive analysis as well as discriminant analysis.

Living standards were measured both subjectively and objectively. The subjective measures were used to gauge the perception of workers on their living standards; they were asked such questions as: “Between when you started working here and today, how much has your standard of living changed?” (a) Drastically reduced, (b) Reduced, (c) Remained the same, (d) Increased, (e) Drastically increased. The objective measures were used to compare living standards in the cluster with standardized (and internationally recognized) indicators of multidimensional poverty and slums indicators. For the standardized measurements, indicators from the standard of living component of the Multidimensional Poverty Index (Alkire and Santos 2010, 7) and the definition of a slum household as defined by the United Nations Human Settlements Program (United Nations Human Settlements Programme 2008, 33) were used. Drawing from these two concepts, the study gathered data on respondents’ electricity, cooking fuel, drinking water, sanitation, assets, flooring, and housing.

THE OTIGBA INFORMATION AND COMMUNICATIONS TECHNOLOGY CLUSTER

The Otigba information and communications technology (ICT) cluster “is an example of self-starting and self-sustaining small enterprises that are in some cases family owned” (Oyelaran-Oyeyinka 2006, 20) providing employment for many including graduates. It originated in the early 1990s on two streets that were designated as residential by the local government, but now occupies eight streets, with Otigba being the largest (ibid. 2006).

The cluster interestingly lies on a scale ranging between formal and informal. On the one hand, it is viewed as informal by the state government

because it is a residential zone that was turned into a business district by private individuals. On the other hand, it is recognized by the same state government, which relates with it through an umbrella association—Computer and Allied Products Dealers Association of Nigeria (CAPDAN)—and collects taxes from the firms. It is a spontaneous cluster, as opposed to a planned one; the latter being those which are “induced by public policies,” or “constructed” from scratch, and “range from technopoles” and industrial parks to incubators and export processing zones (EPZs)” (Zeng 2008, 2). It also has a wide range of workers from casual day workers to those employed in more established firms.

The major activity of the cluster is the assembly and trade of computer hardware and software and it “has been variously described as ... ICT... hub of West Africa, potentially the biggest ICT market in Africa, and the Silicon Valley of West Africa” (Abiola 2008, 66). Survey results show that more than 50% of businesses are involved in the sale of new laptops and laptop accessories, retailing, installation, and cloning (i.e., assembling) of computers. A sizeable percentage (46.2%) of firms are also wholesalers, some selling in bulk to others within the cluster or to middlemen and end users in other parts of the country and beyond.

The ICT industry also has firms that make locally branded products including laptop and desktop computers. These companies, including Omatek, Zinox, Speedstar, and Brian Integrated Systems, are called original equipment manufacturers, but face competition from foreign brands like Dell and Toshiba, which many consumers prefer. Omatek is itself not located within the cluster, while Speedstar and Brian are located in very close proximity to it. Zinox has an office (though not the headquarters) within the cluster itself. Other non-ICT related products like clothes, shoes, cooked food, and fruit are also sold in the cluster. Businesses that support and are present in and around the cluster include financial institutions (for example, Zenith Bank, Skye Bank), and cargo companies (for example, DHL, FedEx Corporation, TNT, AS, Global express, IMS, and Tranex). Indian (Zed Mobile) and Chinese (Tecno) firms are also penetrating the market. Credit facilities from banks as well as other SMEs are also available in the cluster.

The cluster has a large population of youth, with 68.7% of employees reportedly between 21 to 30 years of age; 7.8% are under 20 years old, while 23.5% are over 31. Survey results show a comparable mix of female

(48.1%) and male (51.9%) employees. The cluster also has a large population of graduates, with close to 50% being university graduates and almost 30% with technical degrees; 19.1% reported having high school degrees, while only 3% had completed only elementary school education.

According to the Small and Medium Enterprises Development Agency of Nigeria (2005), CAPDAN had about 3,500 registered enterprises, with about 8,000 to 10,000 employees, excluding their employers. There are also about 1,500 street operators. These numbers have grown since then. The cluster has thus served to employ a lot of people, and between 1999 and 2004 it saw an increase in profitability and output exported (Oyelaran-Oyeyinka 2007). In surveying the present worth of the firms, 11.6% of respondents fell into the N0—N50,000 and N50,000—N100,000 categories (US\$1 equals approximately N161 on 1 August 2014). The largest number of respondents (27.4%) indicated that their businesses were worth between N1,000,001—N5,000,000, while 10.5% had businesses worth over a N100,000,000 (author field survey, 2013).

The trade reach of the cluster extends beyond Lagos State, and even Nigeria. This is because the cluster has a large variety of foreign customers including individual end users, companies, and other retailers, including those from Congo and South Africa, but most from West Africa—Abidjan, Ghana, Sierra Leone, and Togo. Furthermore, some firms obtain their inputs largely from within the cluster and ICT distribution centers, while others have established contacts with firms in countries of origin such as China, Malaysia, Dubai, the United Kingdom, the United States of America, Hungary, and Mexico to purchase parts and intermediate products. One implication of this is that the price of the goods is significantly influenced by the exchange rate regime, showing the importance of macroeconomic policies on firm profitability.

PRESENTATION AND DISCUSSION OF FINDINGS

Drawing from the field research and statistical analysis of the survey data, I present the following findings. First, the cluster has attracted a large stream of individuals and enterprises. Though it might not be easily quantified, the impact of direct employment and income generation is clear. There also exists an informal apprenticeship system and the cumulative experiences of

street vendors that breeds a diverse and impressive number of ICT enterprises—software sales, minor repairs, and market information. This category of indirect employment creation is also to be estimated in thousands of people. New and longer time unemployed graduates who have been left out of formal jobs will find refuge by the hundreds in this cluster.

The cluster arguably accounts for the highest employment level of any ICT agglomeration in the subregion and in the country. Informants agreed that Computer Village helped to provide a source of employment and income for many people. One interviewee was categorical that in the unlikely event of closing down the cluster, it would lead to unemployment, poverty, and insecurity. In response to a newspaper interview question, “What significant role would you say the Computer Village is playing in the national economy?” the secretary of CAPDAN stated:

The contribution from this cluster has been enormous.... Computer Village, I stand to be corrected, has done more than any other sector has done for this country.... When you talk about employment and wealth creation here, it is amazing what impact this village has made on the economy (National Mirror 2012).

Second, a significant number of employees (70% of total respondents) in the cluster recorded an increase in their standard of living. Discriminant analysis showed that the age of employees, experience in other firm, and location of firm were significant at a 1% level in explaining the reply of employees who responded affirmatively to the question “Has working in this firm increased your standard of living?” That is, employees who were older, and those who had previous experience in other firms, tended to have better standards of living than those who were younger and did not have this experience. This could be as a result of the former group having developed more skills and expertise over the years.

Third, and of great significance for this study, is the strong case made for firm agglomeration, as firm clustering was seen to promote not just firm-level productivity but also to raise the living standards of workers compared to non-cluster-based firms. About 55.1% of employees who responded agreed that workers in Computer Village were faring better financially than those doing the same work outside of Computer Village. Although less than half (46.8%) admitted that workers in Computer Village were very satisfied,

Table 1: Typology ICT-related businesses and vulnerabilities

Actors	Description and Vulnerabilities
Street hawkers and vendors	No shop or permanent structure. Highly vulnerable to work-related risks and disabling effects of cluster. Sales and profits likely to be volatile. Susceptible to the vagaries of the weather and state government efforts to sanitize the cluster.
Stall/temporary structure vendors	Use of hired space usually in front of buildings or by the sides of streets. Space delineated with temporary things like a box with a chair; a table and chair; a bookshelf; car tires, sometimes with some shade like a big umbrella. Slightly more advantaged than street hawkers and vendors as they have an identifiable location where customers can find them. Highly vulnerable to the weather and can be considered a nuisance by government seeking to sanitize the cluster.
Moveable & immoveable kiosks	More permanent than temporary stalls. Kiosks can be made from metallic materials. Less vulnerable than street hawkers and stall owners, and are easily located by customers.
Stores/shops	Most established companies in the cluster. Comprise small, medium, or large firms as measured by number of employees. Firms are usually fully registered with the association and pay tax. They have access to the Hygeia health insurance scheme in the cluster and are more likely to qualify for bank loans. Some have additional branch(es) either in the cluster or elsewhere. Not exposed to the risk of the state task force's effort to cleanse the cluster.
Original Equipment Manufacturers	ICT firms with own brands. Include Zinox, Omatek, Brian Integrated Systems, and Speedstar. These actors constantly push for the promotion of their brands in Nigeria and have been beneficiaries of policies by which government agencies are required to use Nigerian-made labels.

Source: Author's field research (2012–2013)

only 35.9 percent of respondents to the question indicated that most workers would go to work outside of Computer Village, given the opportunity.

Study findings also reveal that entrepreneurs and industrial workers in this same geographical space face different types and intensities of vulnerabilities, and are spread along the informal to formal continuum, as seen in table 1 below. The less established actors, e.g., street hawkers and temporary structure vendors, tend to be more vulnerable and susceptible to the weather, to be subject to continual stress by the state government that seeks

to sanitize the cluster, and to be excluded from access to bank loans and the cluster's health insurance scheme.

Finally, while formal social protection institutions and policies requiring firms to give benefits to workers are largely absent, the firms and informal institutions based on social and kinship ties fill this gap by helping to penetrate the labor market and providing employment, monetary, and non-monetary benefits, like housing, transport allowance, feeding allowance, and apprenticeships to workers, all of which helps to improve their living standards. Study findings show that within the cluster, employees and apprentices often depend on family and friends for accommodation and job referrals; some work within firms owned by people they know and due to kinship relations. Thus, whereas only 3.5% of firm owners and managerial staff stayed with relatives or friends, 19.1% of employees stayed with relatives or friends. Out of 40.5% of the employees, 18.4% came to work in their firms because of a friend, 9.6% because of a family member, and 12.5% because of a kinsperson; 28.7 and 22.8% came because of their employer and on their own initiative, respectively. Moreover more than half (57.9%) of the employees worked in firms that were owned by a friend (21.8%), family member (15%), or kinsman (21.1%). Evidently, dependence on kinship and family is closely related to status and income. The less well off a worker is, the higher the vulnerability to poor social protection regimes and the higher the propensity to rely on informal support.

Statistical analysis also shows a significant and clear relationship between increase in the standard of living of employees and their social networks, specifically family members and kin. In particular, 70.37% and 60% of employees whose companies were owned by kinsmen and family members, respectively, show an increase in their standard of living.

CONCLUSION AND POLICY RECOMMENDATIONS

Employment is central to human development, and productive clusters can be a solution to the ubiquitous problems of unemployment in many African countries. The Otigba cluster is a beehive of young computer entrepreneurs who could potentially transform their enterprises given the right institutional support, but formal social protection is clearly weak by all measures. I would suggest that the state and its agencies acknowledge existing informal

entrepreneurial workers and firms as contributors in reducing unemployment and poverty, incorporate them into national economic development agendas, and make considerable effort to understand their various vulnerabilities while supporting and enhancing their productivity.

Also, to effectively address issues of vulnerability among informal economy workers, I would propose an approach taken by Lund and Srinivas (2000), who suggest moving away from a dichotomous categorization of the formal and informal economy to looking at each subsector of the economy on a continuum from formal to informal. For example, the sector can be conceptualized along the spectrum of the more formal/established firms to the semiformal and up to the largely informal firms/workers, as seen in table 1 above. This enables the question: “*Under what conditions can what kinds of workers in the informal economy... get access to what core measures of provision, which can be incrementally improved upon in the future?*” (ibid., 13, emphasis by authors). Based on this analysis, policy can be made to address gaps and judge what is the appropriate intervention for each set of actors; for example, is it physical structures to address environmental vulnerabilities, credit facilities for start-ups, or policies to guard against foreign exchange shocks for the wholesalers and importers.

We also find that in the Otigba cluster, informal institutions based on kinship and social networks are currently playing a useful role in reducing certain vulnerabilities by providing employment, training, housing, feeding, and transportation allowance and in a sense offsetting the high cost of living for workers in the Nigerian economy. However, these informal social protection mechanisms rely on non-systematic socially shared rules, usually unwritten, that may be impossible to replicate and enforce outside of the narrow network in which they are operating. Furthermore, the scope of the assistance provided excludes some actors in the cluster. Although informal institutions have survived and substituted for weak state institutions, it remains to be seen if this system is sustainable in the long run especially in the context of rapid global changes and innovation-based dynamic industrialization. It is recommended that further study be done on the role of informal institutions, to interrogate their performance compared to formal rules that have been systematically codified over time.

REFERENCES

- Abiola, Boladale Oluyomi. 2008. "The Otigba Computer Village Cluster in Nigeria." In *Knowledge, Technology and Cluster-Based Growth in Africa*, edited by Douglas Zhihua Zeng, 65–76. Washington, D.C.: The World Bank.
- Alkire, Sabina, and Maria Emma Santos. 2010. "Acute Multidimensional Poverty: A New Index for Developing Countries." *Working Paper 38*. Oxford Poverty and Human Development Initiative.
- Bianchi, Patrizio, Lee M. Miller, and Silvano Bertini. 1997. *The Italian SME Experience and Possible Lessons for Emerging Countries (Executive Summary)*. Vienna: United Nations Industrial Development Organization.
- Institute of Development Studies. 1997. "Collective Efficiency: A Way Forward for Small Firms." *IDS Policy Briefing*, 1–6.
- International Labour Organization. 2012. *Decent work indicators: Concepts and definitions*. Geneva: International Labour Organization.
- International Labour Organization (ILO). *Informal Economy*. <http://ilo.org/global/topics/employment-promotion/informal-economy/lang-en/index.htm> (accessed August 1, 2014).
- Kaplan, Seth. D. "What Makes Lagos a Model City." January 7, 2014. http://www.nytimes.com/2014/01/08/opinion/what-makes-lagos-a-model-city.html?_r=0 (accessed July 31, 2014).
- Levitsky, Jacob. 1996. "Support Systems for SMEs in Developing Countries—A Review." *Paper Commissioned by the Small and Medium Industries Branch*. Vienna: United Nations Industrial Development Organization.
- Lund, Frances, and Smita Srinivas. 2000. *Learning from Experience: A Gendered Approach to Social Protection for Workers in the Informal Economy* (2nd Ed.). Geneva: International Labour Organization.
- Maloney, F. William. 2004. "Informality Revisted." *World Development* 32 (7): 1159–78.
- Mano, Yukichi, Takashi Yamano, Aya Suzuki, and Matsumoto Tomoya. 2011. "Local and Personal Networks in Employment and the Development of Labor Markets: Evidence from the Cut Flower Industry in Ethiopia." *World Development* 39 (10): 1760–79.
- McCormick, Dorothy. 1999. "African Enterprise Clusters and Industrialization: Theory and Reality." *World Development* 27 (9): 1531–51.
- Nadvi, Khalid, and Stephanie Barrientos. 2004. *Industrial Clusters and Poverty Alleviation: Towards a Methodology for Poverty and Social Impact Assessment of Cluster Development Initiatives*. Vienna: United Nations Industrial Development Organization.
- National Mirror*. "Govt Not Serious About Developing ICT—Oboro." April 4, 2012.
- Organisation for Economic Co-operation and Development. 2013. *Perspectives on Global Development 2013: Industrial Policies in a Changing World, Shifting Up a Gear (Pocket Edition)*. Paris: OECD.
- Oyelaran-Oyeyinka, Banji. 2007. "Learning in Local Systems and Global Links: The Otigba Computer Hardware Cluster in Nigeria." In *Industrial Clusters and Innovation Systems in Africa: Institutions, Markets and Policy*, edited by Banji Oyelaran-Oyeyinka and Dorothy McCormick. Tokyo: United Nations University.
- Oyelaran-Oyeyinka, Banji. 2006. "Learning in Hi-tech and Knowledge in Local Systems: The Otigba Computer Hardware Cluster in Nigeria." *Working Paper 2006–007*. Maastricht: Institute for New Technologies, United Nations University.

- Schmitz, Hubert. 1995. "Small Shoemakers and Fordist Giants: Tale of a Supercluster." *World Development* 23 (1): 9–28.
- Schmitz, Hubert, and Khalid Nadvi. 1999. "Clustering and Industrialisation: Introduction." *World Development* 27 (9): 1503–14.
- Small and Medium Enterprises Development Agency of Nigeria. 2005. "National Study of SME Clusters (Otigba Cluster)." February–March.
- Sparreboom, Theo, and Alana Albee. 2011. "Introduction." In *Towards Decent Work in Sub-Saharan Africa: Monitoring MDG Employment Indicators*, edited by T. Sparreboom and A. Albee, 1–8. Geneva: International Labour Organization.
- Srinivas, Smita. 2010. "Industrial Welfare and the State: Nation and City Reconsidered." *Theory and Society* 39 (3): 451–70.
- Srinivas, Smita. 2009. "Cost, Risk, and Labor Markets: The State and Sticky Institutions in Global Production Networks." *Indian Journal of Labor Economics* 52 (4).
- United Nations Human Settlements Programme. 2008. *State of the World's Cities 2010/2011: Bridging the Urban Divide*. London: Earthscan.
- Weijland, Hermine. 1999. "Microenterprise Clusters in Rural Indonesia: Industrial Seedbed and Policy Target." *World Development* 27 (9): 1515–530.
- World Bank. 2013. *World Development Report 2013—Jobs*. Washington, D.C.: The World Bank.
- Zeng, Douglas Zhihua. 2008. "Knowledge, Technology, and Cluster-Based Growth in Africa: Findings from 11 Case Studies of Enterprise Clusters in Africa." In *Knowledge, Technology, and Cluster-Based Growth in Africa*, edited by D. Z. Zeng. Washington, D.C.: The World Bank.

Impact of Mobile Money Usage on Microenterprise: Evidence from Zambia

Laura I. Frederick

Department of Economics, University of San Francisco

ABSTRACT

Mobile money systems have spread rapidly in the last decade. Developing countries are powered by informal economies that traditionally lack access to information technology. Consequently, mobile payment systems have the potential to transform the way microenterprises conduct business. Through a pilot study in Livingstone, Zambia, I examine the effects of mobile money usage on microenterprises. I employ an instrumental variable strategy to address selection bias inherent in adoption. In this urban context, I find evidence of positive net marginal benefits for microenterprises using mobile money, and I calculate bounds that range between 36% and 74% increase in profits.

INTRODUCTION

In low- and middle-income countries one-fourth to one-half of the economy is comprised of the informal sector, which mostly constitutes self-employed individuals with micro and small businesses (ILO 2012). Traditionally, these enterprises have had limited access to capital for growth and information technology that would help improve productivity. This double binding constraint has made it difficult for self-employed individuals to generate a sufficient livelihood. The rapid penetration of mobile phones in the last decade has provided a new opportunity for entrepreneurs to overcome these

barriers. This provides the motivation for this research, which examines the impact of mobile money usage on microenterprises profits.

There are over 200 live mobile money¹ deployments around the world today in 84 countries, with over half of these live deployments in sub-Saharan Africa (GSMA 2013, Global Mobile Money Adoption Survey). The number of active mobile money accounts globally has reached 61 million as of June 2013, with 42.4 million in sub-Saharan Africa. In 44 countries there are more mobile money agents than bank branches.² In nine markets, there are now more mobile money accounts than bank accounts: Cameroon, the Democratic Republic of Congo, Gabon, Kenya, Madagascar, Tanzania, Uganda, Zambia, and Zimbabwe (GSMA 2013a).

This study focused on Livingstone, Zambia, the most southern town in the country, providing an urban context for the research. To assess the presence of a causal effect of mobile money on microenterprise I compare micro-entrepreneurs who use a mobile money account with those who do not. That anyone in the country may choose to sign up for the mobile money service raises the issue of self-selection bias. In particular, there is a concern that entrepreneurs who adopt mobile money are systematically different from those who do not in a number of observed and unobserved ways, including being more tech savvy, having larger businesses and broader business networks, and with greater motivation or higher risk tolerance. In order to address this concern, I employ an instrumental variable strategy for the analysis that leverages the variation of market entry, agent deployment, and marketing efforts between the mobile network operators (MNOs) as an exogenous factor affecting customer uptake of mobile money service.

With this approach, I find a local average treatment effect of 74% increase in net marginal profits for urban micro-entrepreneurs who use mobile money. Although this result is not significant at the 10% level, the magnitude of the estimate cannot be ignored. Drawing from the literature (Altonji et al. 2011), I conduct a bounds analysis, which places the

1 Mobile money is commonly defined as an electronic wallet, which is a transactional account linked to a mobile phone number, typically offered by a telecommunication provider. In some cases, the account may be offered by a third-party vendor that is neither a telecommunication company, nor a bank.

2 Mobile money agents globally number 886,000 of which 464,000 were active as of June 2013, which means they are reliably funded (GSMA 2013b).

true result between a 36% and 74% increase in net marginal profits. The primary interpretation of these significantly high results indicates that for microenterprises with a small capital base, a nominal increase in savings can have a powerful multiplicative effect on income. These results contribute further evidence to the literature that even quite small enterprises can benefit positively and substantively from access to affordable and appropriate payment technology.

This paper proceeds with a literature review in Section 2. Section 3 provides a description of the Zambia context. Section 4 explains the methodology for the research along with the instrumental variable strategy. Section 5 presents the summary statistics, the results, an analysis of the robustness of the specification, a bounds analysis, and an interpretation of the results. Section 6 concludes with a summary and policy recommendations.

LITERATURE REVIEW

Technology Innovations and Economic Growth

Empirical evidence that investigates a direct effect of payment systems on economic growth is sparse. Berger (2003) found information technology (IT) innovations to have a positive impact on overall economic growth through positive effects on banking systems and bank efficiencies. Waverman et al. (2005) find investments in mobile telecommunication infrastructure to have a positive and significant impact on economic growth. Specifically, they find that a unit increase in mobile phone penetration increased economic growth of a country by 0.039 percent. Given that payment technology and telecommunication infrastructure investments independently have shown positive effects on economic growth, it is expected that coupled together there would be an even greater positive effect on an economy, in general, and entrepreneurs in particular.

The positive effect of information communication technology (ICT) on improved productivity in medium and large firms is well documented in developed countries through a myriad of firm and sector case studies. However, the literature on the effects of ICT on micro and small enterprises is limited. Donner (2007) finds mobile phone use by micro-entrepreneurs in Kigali, Rwanda, enables new business contacts and extends existing social relationships. Summarizing 14 research studies for micro and small enterprises

(MSEs) Donner and Escobari (2010) find mobile phone use alone, even without the payment services, helps many MSEs to become more productive through improvements in sales, marketing, and procurement processes.

Financial Inclusion and Mobile Money

Access to affordable financial services is linked with overcoming poverty, reducing income disparities, and increasing economic growth. Despite our understanding of the benefits of financial inclusion, an estimated 2.5 billion people in lower to middle-income countries remain without access to financial services (World Bank 2014). Mobile money has the potential to bridge this gap. Although mobile money literature is still limited, initial empirical evidence indicates that using a mobile money account brings positive returns for entrepreneurs. A market-level analysis conducted by Mbiti and Weil (2011) in Kenya found introduction of M-PESA led to significant decreases in the prices of money transfer services. Additionally, they found an increase in the frequency of receiving remittances, which the authors conclude, has contributed over time to financial inclusion in the country (Mbiti and Weil 2011; Jack and Suri 2011). In Mozambique, Batista and Vicente (2013) find evidence that the marginal willingness to remit was increased by the availability of mobile money and observed substitution effects of mobile money for traditional alternatives for both savings and remittances. In Niger, Aker et al. (2011) found usage of mobile money accounts for delivery of cash transfers reduced the overall transaction costs of recipients, while offering an increase in freedom, flexibility, and privacy. A qualitative pilot study conducted in rural Cambodia by Vong et al. (2012) identifies benefits of time, security, and convenience for rural micro-entrepreneurs who use mobile money services.

Savings Opportunity

Savings is the primary source for entrepreneurs to start or grow businesses, mainly through expanded inventory. Consequently, having a safe and easy place to save is imperative for them. According to the study by Jack and Suri (2011), 75% of households that use M-PESA in Kenya report using their mobile money account to save. Among these M-PESA users, 21% reported that it is their most important saving instrument and 90% say it is one of the three most important. Data collected in Tanzania from three thousand households indicates 90% of mobile money users without a bank account report using their mobile account to save or store money in the last six months

(InterMedia 2014). Dupas and Robinson (2009) find strong evidence that a large fraction of female micro-entrepreneurs in rural Kenya face major savings constraints. In an experiment, women provided with savings accounts saved to increase the size of their business and, in turn, increased their income and expenditures (Dupas and Robinson 2011). Using ethnographic research in Kenya, Morawczynski (2009) identified that mobile money helps rural users to manage risk and diversify resources; in particular, women noted being able to save specifically to start an income-generating activity for greater reliability of income and freedom. Interestingly, initial evidence from Aker et al. (2011) indicates that mobile money users receiving the same grant payment amount as non-users produce a more diverse basket of agricultural goods.

In light of this literature, there is an opportunity to investigate further the marginal impact of mobile money on low-income household enterprises in the informal sector, which traditionally, have not had access to such transformative technology. This pilot study looks to contribute to the literature in two ways: first, by addressing the gap regarding the effects of mobile money payment technology usage for microenterprises; and second, by employing an instrumental variable strategy with a cross-sectional data set coupled with a bounds analysis to assess causal impacts of mobile money usage.

MICROENTERPRISE AND MOBILE MONEY IN ZAMBIA

Microenterprise in Zambia

Located in sub-Saharan Africa, Zambia is a country of 14.2 million people with 40% living in the urban areas and 60% living in the rural areas (CIA World Factbook 2014). Of this population, 35% are working with another 16% unemployed. Of those working, 88% work in the informal sector, which is divided between agriculture (62%) and non-agricultural enterprises (26%) (Zambia Central Statistical Office 2010). Among the non-agricultural portion, the informal sector category includes micro and small enterprises. This study follows the World Bank definition focusing on urban microenterprises with less than five employees.³

3 Such enterprises are generally defined on a country basis. Zambia defines informal enterprises as those with less than five employees. According to the IFC (2012) a microenterprise is classified as a business with less than five employees and assets worth less than US\$10,000.

Mobile Money Systems

Mobile money is defined as an electronic wallet that is a transactional account offered by a telecommunication provider. The account is linked to the mobile number of the customer. Through an agent of the mobile operator, funds may be deposited into or withdrawn from the account. Agents are typically, although not exclusively, general shop owners, distributors, airtime sellers, or money change outlets, due to their high liquidity. Once funds are in an account a customer is able to send or receive money, purchase airtime or other products, pay bills, or check balances directly from their mobile phone using a given application. The cost of trying the services is basically free (zero),⁴ as there is no cost to open an account or deposit funds.

Mobile Phone and Mobile Money Markets in Zambia

The telecommunication market in Zambia includes three providers for voice and data services: Airtel Zambia (Airtel), MTN Zambia (MTN), and Zamtel. As of 2012 the country had 10.525 million mobile line subscribers (CIA World Factbook 2014). This does not account for individuals who have multiple lines, which makes it difficult to know precisely the penetration rate in the country. Best estimates indicate mobile ownership is higher in urban areas, reaching over 72% of adults, decreasing to only 31.5% in rural areas (FinMark Trust 2012). Data available from 2011 show Airtel as the market leader for voice services with 32.4% of the market share; MTN has 20.73% and Zamtel 9.8% (ibid.).

In early 2011, Airtel launched their mobile money offering called Airtel Money and received their license in September. MTN soft launched MTN Mobile Money services in early 2011 as well, but did not receive their official mobile money license until January of 2012. As of August 2013, Airtel had 1.2 million registered mobile money subscribers, of which approximately 14,000 to 15,000 were regular users of the mobile money services (Malakata 2013). As of May 2012, 4,700 agents were reported in the country, of which 4,000 were attributed to Airtel and 370 to MTN (FinMark Trust 2012). Hence, at the time of the research, mobile money had only been broadly available in the market for about 18 to 21 months,

4 A person can complete a transaction for as little as 2Kwacha (US37 cents) by buying some airtime or electricity for no additional cost, which is a low risk means of testing that the system works.

resulting in an early stage and competitive market with only two telecommunication providers. In the Livingstone market specifically, MTN was more active with marketing and recruitment of mobile money customers evidenced by radio and TV ads, number of billboards, and visibility of marketing representatives.

METHODOLOGY

Instrumental Variable Strategy

To identify the causal effect of mobile money usage on microenterprise, this research compares micro-entrepreneurs who use mobile money with those who do not. That anyone in the country with a mobile phone line and a national identification card may choose to sign up for the mobile money service raises the concern of self-selection bias. In order to address this empirical challenge, I employ an instrumental variable strategy.

The concern is that early adopters of mobile money may be systematically different than later adopters in such a way that would also affect profits, most notably through a stronger risk-taking entrepreneurial spirit. Therefore, I instrument for the endogenous variable to strip away this confounding factor by using the mobile operator as an exogenous indicator of mobile money usage.⁵ To better understand the validity of the instrument in the Zambian context (as well as much of Africa), it is important to understand the multiphone line/SIM culture. It only costs 5 Kwacha (US\$1) to get a mobile phone line/SIM versus a minimum 100 Kwacha (US\$20) to buy a basic new phone. Therefore, it is inexpensive enough to acquire an additional line to take advantage of different operator services. This is evident in the sample, as 70% reported having two or more phones lines, while 65% reported having only one phone. Given the low cost of acquiring an additional line, a change in mobile money usage (potential assignment) is near frictionless and may be influenced by the operator (instrument) through agents or direct marketing. This makes the mobile operator a strong predictor of being a mobile money user, and potentially an effective instrument.

5 Previous studies have used distance to agent location as an exogenous factor; however that spatial data was not sufficiently available for this study.

The micro-entrepreneurs in this monopolistic market have had limited choice of operator for reasons outside their control, such as communication regulations, accessibility of service, and competition. Additionally, the mobile operator's decision to enter the mobile money market is driven by concerns such as technology, marketing, and agent management. Collectively, I argue that the mobile operator's business decisions are plausibly exogenous to a micro-entrepreneur's business decisions, conditional on the micro-entrepreneur having a mobile phone line and controlling for covariates of business type, business ownership, and market fixed effects. Consequently, conditional on having a phone line,^{6,7} the mobile operator is as good as randomly assigned in this environment, satisfying the independence assumption in the first stage.

A second necessary condition for this analysis is that the outcomes (profits) be a function of mobile money user only, and not the mobile operator (the instrument), creating a unique channel of causal effect of the instrument to flow only through treatment (mobile money usage). Given that early adopters of mobile money may have more of an entrepreneurial spirit than later adopters, I condition on covariates that reflect this same spirit, such as type of business,⁸ market, maintaining a bank account, and earlier life choices, such as education. Conditional on these covariates—along with having a mobile phone line, age, and gender—all other effects on profits are therefore attributed to mobile money usage, thus satisfying the exclusion restriction.

One final assumption of monotonicity is necessary for this analysis of heterogeneous effects, which requires that while the instrument may have no effect on some people, all those who are affected, are affected in the same way. In this case, it is plausible to assume that choice of operator either makes one more or less likely to use mobile money, but not both.

6 Phone ownership is considered a wealth status and may be endogenous with profits for micro-entrepreneurs; therefore, for the purpose of this analysis, SIM ownership is used as an indicator of having a mobile phone.

7 In a few cases, the entrepreneur may not currently have a phone because it was broken or lost. They can use their own SIM and borrow the mobile handset of relative or friend.

8 Business type is more of an indicator of product/service type, as all the micro-entrepreneurs are involved in some form of retail sales or services.

Empirical Specification

The specification for the instrumental variable approach uses two-stage least squares. In the first stage, I regress the mobile money usage on the instrumental variable, which is a composite of mobile operators that provide mobile money. To create a single instrument variable, I add together the dummy variables for MTN user and Airtel user, which can become 0, 1, or 2.⁹ Business ownership, business type, market, age, education, gender, and having a bank account are included as covariates, given their predictive power on profits and the outcome variable of interest, and as control factors. The Zamtel user variable is also included to fully condition on having a mobile phone line, as the other two are included as the instrument.

The primary hypothesis being tested is that there is no change in profits for the mobile money user. In the following expressions of the reduced form two-stage least squares, M is the bivariate variable representing the entrepreneur's usage of the mobile money service or not. The mobile operator instrument is denoted as P . Finally, X is the vector of covariates outlined above.

$$\begin{array}{cc}
 \text{Stage 1} & \text{Stage 2} \\
 M_i = \delta_0 + \delta_1 P_i + \delta_2 X'_i + u_i & Y_i = \beta_0 + \beta_1 M_{IVi} + \beta_2 X'_i + v_i
 \end{array}$$

In the second stage, log of total profits (for last month)¹⁰ is regressed onto the instrumented variable (M_{IV}) along with the same set of covariates (X).

Given the literature, it is hypothesized that access to low-cost payment technology will have a positive effect on microenterprises. There are potentially three mechanisms by which this may be caused. One is the real-time nature of the transaction, such that both the buyer and supplier know

9 As people can have multiple lines with any of the three mobile operators, there is a dummy variable for each operator used per individual. In the case of zero, the entrepreneur has only one phone line and it is with Zamtel.

10 Total log profits for last month is used as the dependent variable. This is based on the validity found in a study of microenterprise self-reporting of profits in Sri Lanka, whereby firms were found to underreport revenues by around 30% and underreport profits by 20% (De Mel, McKenzie and Woodruff 2009). There is no indication from the interview process or the sample that indicates there might be any difference between the two groups, those using mobile money and those not using mobile money in their reporting (or underreporting) of profits. Consequently, as this study is looking only at differential change, not absolute values, no adjustments in profits are made.

immediately that the funds have been transferred even though they may be in separate locations. This reduction in risk may lead to larger or more diverse inventory purchases that result in higher profits. Additionally, this may save on transportation costs, which can be applied to an increase in inventory purchasing, which in turn increases profits. Second, being able to access the funds remotely, for a range of purposes, at any time of the day without preplanning, may lead to opportunities that increase profits that would otherwise have been missed if the funds had not been readily available. Third, the mobile money account may provide a liquid, convenient, and safe place to hold funds, which reduces leakage of funds to personal needs and leads to more capital investment in the enterprise. This increased investment may result in higher profits.

DATA ANALYSIS AND RESULTS

Sample Description

Micro-entrepreneurs were randomly selected to be interviewed from ten randomly selected markets within Livingstone.^{11, 12} Interviews were conducted with 430 micro-entrepreneurs providing a viable sample of 204 surveys, consisting of 73 mobile money users and 131 non-mobile users.¹³ Comparing mobile users and non-mobile users, I find a sufficient balance across the groups, which mirrors the balance found in the full sample of 430 surveys. As seen in Table I below there are minimal differences between the two groups among personal attributes, such as age, education, gender, use of English, and having a bank account. This holds true for most business attributes as well, such as ownership status, business structure,

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- 11 A couple of the markets failed to generate enough surveys or did not have the type of microenterprises desired, such that two markets were dropped and three additional markets were added making a total of 10 markets surveyed.
 - 12 Chandamali was the initial test market. The 10 markets used include 2nd Class/Green Market, Libuyu, Maramba, Mbita, Mukuni, Ntalahouse, Park/Parlamat, Zimbabwe/Town Center, COMESA, and Ellen Brittel.
 - 13 Insufficient information on profits or other important covariates reduced the sample. Outliers above 10,000 Kwacha (two observations) and below 50 Kwacha (three observations) were excluded.

business registration, market, and length of time in business. Number of mobile phones is significantly different as a single categorical variable, but not at the subcategory level. The same is true for number of phone lines/SIMs. Of those who own two or more than two mobile phones, they are equally balanced between the control and treatment group, respectively. For those with one mobile, there are twice as many non-mobile money users as mobile money (MM) users, driving the overall difference.

Core Findings

In the first-stage regression, the mobile operator is significant at the 1% level with an F-statistic of 9.10, indicating the instrument's ability to predict adoption of the service. Subsequently, I find a local average treatment effect of 74.6% increase in net marginal profits for micro-entrepreneurs using mobile money as compared with those not using the service, although it is not significant. This is likely due to the large standard errors generated by the 2SLS procedure (see Table II Column 1 below). Still the magnitude and potential economic significance of the results cannot be ignored. As there is no indication of heteroskedasticity, I use standard errors for the analysis.¹⁴

Robustness Checks

There is a possible concern of insufficient correlation between the variable of interest and the instrument, given that the first stage F-statistic is just below 10, indicating a potentially weak instrument. Given the small sample of this study, per the recommendation of Angrist and Pischke (2009), I run the same regression using limited information maximum likelihood (LIML) as a comparison estimator. As this is only valid with an over-identified model, I use the mobile operator dummies independently, such that there are two instruments for one endogenous variable. This regression provides nearly the same coefficient (74.4%) with basically the same standard errors and significance (see Table II Column 2 above). With a high p-value of 0.9615 for the F-statistic, I fail to reject the null that the model is over identified. While it is not possible to prove that the instrument is too weak,

¹⁴ To ensure the most precise estimates of errors possible I ran the regression with clustered errors, even though there are only 10 unique clusters. This produced the same coefficient estimate, but with smaller errors and higher significance indicating downward bias in the errors. Therefore, to be conservative I remain with the conventional standard errors.

Table 1: Summary Statistics

Variables	MM Users		Non-MM Users		T-Test
	Obs.	Mean	Obs.	Mean	
Age	73	31.7	131	32.7	0.723
Education	73	2.877	131	2.977	0.920
Female	73	0.466	131	0.397	-0.951
English	73	0.685	131	0.626	-0.842
Bank account	73	0.411	131	0.435	0.299
No. mobile phones	73	1.534	129	1.333	-2.213 **
No. phone lines (SIM)	73	2.068	128	1.781	-2.872 ***
Trustworthy	46	2.935	58	3.052	0.538
Business owner	73	0.918	131	0.947	0.697
Business partnership	73	1.603	131	1.481	-0.771
Business structure	73	2.192	131	1.985	-1.292
Business registration	73	2.288	131	2.275	-0.084
Time in business	73	3.507	131	3.405	-0.392
Use Airtel	73	0.904	131	0.817	-1.669
Use MTN	73	0.808	131	0.641	-2.524
Use Zamtel	73	0.288	131	0.221	-1.053

** $p < 0.05$, *** $p < 0.01$

the similarity in coefficients and the failure of over identification provides further evidence that the regression is properly specified.

However, an additional concern arises from the results of the Wu-Hausman and Durbin tests of endogeneity. In both cases, the F-statistic p-value is too large¹⁵ to reject the null hypothesis that the mobile money user variable is exogenous¹⁶. Conceptually it is unlikely that having a mobile money account is not endogenous with profits. However as an alternative, I run an OLS regression, as it will be both consistent and unbiased if there is no endogeneity (see Table II Column 3 above). The coefficient remains substantively positive at 36.2% and becomes significant at the 5% level. Given the potential issues with the IV strategy, I conduct a bounds analysis of these two point identifications that relies on weaker assumptions.

Bounds Analysis

To address concerns of potential selection bias that may be present from unobservable variables not being fully controlled for by the IV estimation, given the strong assumptions of independence and exclusion, I explore calculating bounds to the findings of this paper. Altonji et al. (2011) have developed a theoretical model from which to infer properties of unobserved covariates based on the correlation structure of the observed covariates. Specifically, they use the relationship between a potentially endogenous variable (or an instrument for that variable) and the observables to make inferences about the relationship between such a variable and the unobservable variables. The authors build off the reality that most research design and data collection is not based on a selection of the best observable characteristics, but rather on a random selection of accessible observable variables. They conjecture, if the observables are correlated with one another, as in most applications, then the observed and unobserved determinants of outcomes are likely to be correlated as well. Going further, they contrast the standard OLS and IV conditional independence assumption (that

15 The Durbin Chi-squared p-value is 0.5955 and the Wu-Hausman p-value is 0.6107 for the F statistic.

16 Doko Tchatoka (2012) finds that when identification is weak and the number of instruments is moderate some versions of suggested Hausman and Taylor (1981) tests are invalid. This is particularly apparent if one is assessing the partial exogeneity hypotheses. This may explain the reason for the test of endogeneity failing.

Table 2: Results Mobile Money Usage
Dependent Variable: Log of Profits Last Month

Variables	IV Model: 2SLS	IV Model: LIML	OLS
MM User	0.746 (0.72)	0.744 (0.72)	0.362** (0.16)
Retail goods	0.405 (0.40)	0.404 (0.40)	0.304 (0.37)
Personal/home goods	0.703* (0.42)	0.702* (0.42)	0.565 (0.34)
Fresh foods	0.288 (0.47)	0.287 (0.47)	0.139 (0.37)
Personal services	0.527 (0.50)	0.525 (0.50)	0.346 (0.37)
Food services	0.570 (0.54)	0.568 (0.54)	0.374 (0.42)
Business ownership	0.471* (0.27)	0.471* (0.27)	0.433 (0.27)
Market	0.064** (0.03)	0.064** (0.03)	0.068** (0.03)
Bank account	0.170 (0.13)	0.170 (0.13)	0.165 (0.14)
Education	0.119 (0.10)	0.119 (0.10)	0.105 (0.10)
Age	0.093 (0.06)	0.093 (0.06)	0.075 (0.05)
Female	-0.575*** (0.18)	-0.575*** (0.18)	-0.527*** (0.16)
Use Zamtel	0.231 (0.19)	0.231 (0.19)	0.272 (0.18)
Use MTN			0.068 (0.16)
Use Airtel			0.066 (0.21)
Constant	3.001** (1.51)	3.005** (1.51)	3.534*** (0.97)
Observations	204	204	204
R-squared	0.182	0.182	0.206

*Standard errors in parentheses * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$*

the researcher has chosen the control variables so that the instrument [or treatment itself] is not related to the unobservable variables) with a new assumption (that the control variables are randomly chosen from the full set of variables that influence the outcome), and argue that the truth is likely in between.

Using a Monte Carlo experiment, the authors provided preliminary evidence supporting their mathematical model. One of many findings, they consistently identify a region of results, with one end occurring at the instrumental variable estimate that leans on the conditional independence assumption and the other end resting on the “observables like unobservables” assumption. Additionally, they find OLS to be biased downward in the case of a positive correlation between the observed and unobserved covariates, suggesting that OLS is a plausible lower bound in the absence of a more exact minimum estimate derived from custom estimators.

Cautiously, I apply these preliminary results to the context of this research given that the Altonji et al. (2011) findings are based on a one thousand observations and a broad array of covariates.¹⁷ Despite the low number of observables in this research, they have explanatory power and are plausibly representative of the full range of factors that could determine outcomes. If one could gather additional observable data about the microenterprises on marketing, purchasing frequency, diversity of suppliers, low- versus high-value products or services, high- or low-volume business models, frequency and purposes of mobile usage for business, I argue that all of these initial decisions are driven by the same unobservable characteristics of the micro-entrepreneur, such as personality, passion, gumption, risk attitudes, internal (i.e., prestige) or external (i.e., children to support) incentives, ability, entrepreneurial savvy, market opportunities, a person’s natural gifts with people, numbers, or systems, and their own values. It is impossible to separate them, as the observable variables are merely a reflection of the unobservable characteristics.

Accepting that the premise of selection on unobservables is the same as selection on observables as a plausible assumption for addressing self-selection

17 Altonji et al. (2011) note that, given the conditions required, it is dangerous to infer too much about selection on the unobservables from selection on the observables if the observables are small in number and explanatory power, or if they are unlikely to be representative of the full range of factors that determine an outcome.

among mobile money users, my prior is that the unobservables are likely positively correlated with the observables. Then drawing from the findings of Altonji et al. (2011) the OLS estimates, which may be biased downward, provide a plausible lower bound. At the other end, given conditional independence and the exclusion restriction hold, then the IV estimate provides a plausible upper bound. Consequently, this approach bounds the results between a 36.2% and 74.6% increase in profits for micro-entrepreneurs using mobile money. These results provide further confidence to the conclusion that access and usage of affordable payment systems has a substantive and positive effect for microenterprises.

Interpretation of Results

Drawing from economic and technology adoption theory, I offer four plausible explanations for the unusually high benefits for microenterprises. First, it could simply be due to chance of sampling variability in the markets, especially given that there are nearly twice as many non-mobile money users as users. An equal amount of mobile money users may have resulted in a lower average profit reducing the difference, although likely still positive.

Business literature indicates that firms that adopt technology or new processes first, in general, have greater returns on investment than those who adopt later. These benefits are typically gained through the first-mover advantage. However, it is unknown if this will hold true for the adoption of mobile money. We may find constant returns for mobile money users regardless of when they adopt the technology. Thus far, there is no indication that a mobile money user who adopts later would have a different return than an earlier adopter.

A third explanation for the high benefits may come from production theory. Microenterprises are on the smaller end of the economic scale; therefore, according to theory, a greater marginal return on human and financial capital would be expected as compared to larger firms. The investment in a mobile phone and the time to learn how to use the mobile money service is relatively minimal. Given the premise of diminishing returns, the expectation of high and positive returns on this level of capital investment for a microenterprise is quite plausible.

Finally, by using mobile money the micro-entrepreneurs may have saved on transportation costs and using the service may have enabled them to save with greater ease, thereby increasing their capital available

for inventory. As well, they may have gained additional sales from not having to leave the business to handle financial transactions, generating additional revenue. This extra capital applied in the context of microenterprise may be small in absolute value, say an extra \$5 to \$10 (25 to 50 Kwacha) per month. However, if applied to inventory, it could increase the base capital investment by one-third or more, driving a 35%–75% change in net marginal profits.

CONCLUSION

Adoption of mobile money services inherently raises concerns of selection bias. To assess the effects of mobile money usage on microenterprise profits, I employ an instrumental variable strategy. Given the competitive telecommunications market and the multi-SIM culture in Zambia, type of mobile operator is used as the instrument for the analysis. With this empirical strategy, I find a local average treatment effect of 74.6% increase in net marginal profits for urban micro-entrepreneurs that use mobile money, and I calculate bounds that range between 36.2% and 74.6% increase in profits. These unusually high benefits seem to stem from small increases in savings applied to relatively low capital investments in inventory.

These results are positive and substantive, indicating that even the smallest entrepreneur gains from access to payment system infrastructure. Moreover, this pilot study suggests that mobile money services have the power to transform the informal sector through the greater financial and economic inclusion of micro-entrepreneurs. Governments have a catalytic role to play in the successful adoption of the mobile money payment systems, in particular through consumer education, ensuring universal access, facilitating registration, as well as in the delivery of payments, such as salaries, pensions, and social benefit grants.

This study contributes to the small body of microenterprise and mobile money literature, and uniquely, through the instrumental variable and bounds analysis, potentially validating the approach. Further research is required to verify that these results are persistent across markets and rural areas; to assess effects on adoption, market saturation, and GDP; and to develop and validate structural models that explain the mechanisms deriving these high benefits.

REFERENCES

- Aker, J. C., R. Boumniel, A. McClelland, and N. Tierney. 2011. "Zap It to Me: The Short-Term Impacts of a Mobile Cash Transfer Program." Center for Global Development Working Paper 268.
- Altonji, J. G., T. Conley, T.E. Elder, and C.R. Taber. 2011. "Methods for Using Selection on Observed Variables to Address Selection on Unobserved Variables (Preliminary and Incomplete)."
- Angrist, J. D., and J.S. Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton, NJ: Princeton University Press.
- Batista, C., and P.C. Vicente. 2013. "Introducing Mobile Money in Rural Mozambique: Evidence from a Field Experiment." NOVAFRICA Working Paper Series No. 1301; <http://dx.doi.org/10.2139/ssrn.2384561>
- Berger, A. N. 2003. "The Economic Effects of Technological Progress: Evidence from the Banking Industry." *Journal of Money, Credit, and Banking* 35(2): 141–76.
- CIA World Factbook. 2014. Zambia Country data. <https://www.cia.gov/library/publications/the-world-factbook/geos/za.html> (accessed March 2014).
- De Mel, S., D.J. McKenzie, and C. Woodruff. 2009. "Measuring Microenterprise Profits: Must We Ask How the Sausage Is Made?" *Journal of Development Economics* 88(1): 19–31.
- Doko Tchatoka, F. 2012. "On the Validity of Durbin-Wu-Hausman Tests for Assessing Partial Exogeneity Hypotheses with Possibly Weak Instruments." No. 15061. University of Tasmania, School of Economics and Finance. <http://econpapers.repec.org/RePEc:tas:wpaper:15061>
- Donner, Jonathan. 2007. "The Use of Mobile Phones by Micro-Entrepreneurs in Kigali, Rwanda." *The Massachusetts Institute of Technology Information Technologies and International Development* 3(2): 3–19.
- Donner, Jonathan, and Marcela X. Escobari. 2010. "A Review of Evidence on Mobile Use by Micro and Small Enterprises in Developing Countries." *Journal of International Development* 22: 641–58.
- Dupas, P., & J. Robinson. 2011. "Why don't the poor save more? Evidence from health savings experiments." *National Bureau of Economic Research*. w17255
- Dupas, P., and J. Robinson. 2009. "Savings Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya." National Bureau of Economic Research, Working Paper No. 14693.
- FinMark Trust. 2012. *Mapping the Retail Payment Services Landscape: Zambia*, November 30. http://cenfri.org/documents/Retail%20Payments/RPSlandscape_Zambia12.pdf
- GSMA. 2013a. *Mobile Money for the Unbanked, State of the Industry 2013*. http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2014/02/SOTIR_2013.pdf
- GSMA. 2013b. *Mobile Money for the Unbanked, 2012 Global Mobile Money Adoption Survey*. http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2013/02/MMU_State_of_industry.pdf
- Hausman, J., W. Taylor, 1981. "Panel Data and Unobservable Individual Effects." *Econometrica* 49(6): 1377–1398.
- IFC. 2012. *Interpretation Note on Small and Medium Enterprises and Environmental and Social Risk Management*, January. <http://www.ifc.org/wps/wcm/connect/>

- de7d92804a29ffe9ae04af8969adcc27/InterpretationNote_SME_2012.pdf?MOD=AJPERES
- ILO. 2012. *Statistical Update on Employment in the Informal Economy*, June. http://laborsta.ilo.org/informal_economy_E.html
- InterMedia. 2014. Mobile Money Data Center. <http://www.m-moneydata.org> (accessed March 2014).
- Jack, W., T. Suri. 2011. "Mobile Money: The Economics of M-PESA." National Bureau of Economic Research, Working Paper No. 16721.
- Malakata, Michael. 2013. "Airtel Zambia Aims for 500,000 Mobile Money Transactions." *IT Web Africa*, August 8. <http://www.itwebafrica.com/mobile/322-zambia/231451-airtel-zambia-aims-for-500000-mobile-money-transactions#sthash.tol5Dwlq.dpuf>
- Mbiti, I., and D.N. Weil. 2011. "Mobile Banking: The Impact of M-Pesa in Kenya." National Bureau of Economic Research, Working Paper No. 17129.
- Morawczynski, Olga. 2009. "Exploring the Usage and Impact of 'Transformational' Mobile Financial Services: The Case of M-PESA in Kenya." *Journal of Eastern African Studies* 3(3): 509-525.
- Vong, J., J. Fang, and S. Insu. 2012. "Delivering Financial Services through Mobile Phone Technology: Pilot Study on Impact of Mobile Money Service on Micro-Entrepreneurs in Rural Cambodia." *International Journal of Information Systems and Change Management* 6(2): 177-86.
- Waverman, L., M. Meschi, and M. Fuss. 2005. "The Impact of Telecoms on Economic Growth in Developing Countries." *The Vodafone Policy Paper Series 2*: 10-24. http://www.vodafone.com/content/dam/vodafone/about/public_policy/policy_papers/public_policy_series_2.pdf
- World Bank. 2014. *Global Financial Development Report 2014: Financial Inclusion*. Washington, DC: World Bank. doi:10.1596/978-0-8213-9985-9.
- Zambia Central Statistical Office. 2010. *Zambia Business Survey*. Source: based on 2005 Labor Source Survey. http://siteresources.worldbank.org/INTAFRICA/Resources/zambia_biz-survey.pdf

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One Woodrow Wilson Plaza

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ISBN: 978-1-938027-44-4

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