The Odisha Liveable Habitat Mission: The process and tools behind the world's largest slum titling project

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Abstract

India has millions of people living in informal settlements that lack basic services, such as clean water and sanitation. These residents often lack property rights and a formal document called a "patta" that allows them to open a bank account, access credit or gain government benefits. Odisha, a state on the eastern coastline of India, is among the least urbanized states in the country, however it is urbanizing at a fast rate. The local government has recognized this need and developed the Odisha Liveable Habitat Mission to issue land rights to slum dwellers and transforming existing slums to liveable habitat. This paper explains the context of the land tenure situation in Odisha, the approach from the Odisha government, a local philanthropy - Tata Trust and the Cadasta Foundation to map and create an official data set of slum dwellings in Odisha and the project impacts including a new property documentation system and land policy.

Table of Contents

Introduction

The rate of urbanization and the number of people living in urban and peri-urban settings has increased exponentially in the past century. According to the United Nations 2014 World Urbanization Prospects report, 66% of the world's population will live in cities by 2050 (2014). Most urbanization will occur in Africa and Asia, with India, China, and Nigeria alone, accounting for one third of all urban population growth. It is estimated that more than half of the world's population is now living in urban areas, with more than one billion living in informal settlements that lack basic services (2016).

Although urbanization is associated with economic development and innovation, the rapid flow of migrant populations to informal settlements creates numerous challenges for existing infrastructure and resources. These settlements often lack basic property rights and access to basic services, such as clean water and sanitation. Residents of informal settlements are also at risk of forced evictions without notice or compensation. Conversely, as the most economically vulnerable populations, they are often most in need of formalized property rights and inclusion in sustained development to protect their livelihoods, health needs, and safety. Conferring the property rights of households living in informal settlements not only assures them of a permanent place to live, but it also addresses their long-term socio-economic development needs.

With the world's second-largest urban population, India is home to millions of people living in informal settlements around the urban periphery. These residents often lack a certificate of property title, known as a *"patta"* A patta is often the only way to show proof of address, to open a bank account, get credit from financial institutions, enroll children in schools, and access a range of government benefits including caste/ community certificates. Without it, resident's financial and social opportunities are significantly impaired. Further, the rapid growth of Indian cities combined with unclear land ownership, has been triggering legal disputes, conflict, and mass evictions, particularly in areas slated for commercial development. As urbanization increases, urban living standards are likely to fall as local governments struggle to meet the demand for services.

The need for patta is particularly critical in the eastern Indian state of Odisha, a state which has a relatively low rate of urbanization but has witnessed a high growth rate of urban population (2011). Realizing the need to recognize the rights of the informal settlements and the need to confer land titles upon the slum households, the Odisha State Government recently enacted a landmark legislation, The Odisha Land Rights to Slum Dwellers Act 2017. As per this legislation, the slum dwellers in slums across the state became entitled to heritable and mortgageable land rights for up to 30 square meters for

residential use.. Further, depending on the extent of land currently occupied by a slum household, there will be a ceiling of forty-five (45) square meters in municipalities[1] and sixty (60) square meters in notified area councils[2] (NACs) on payment of a certain percentage of benchmark value. However, for urban poor households, land rights up to 30 sq. m is settled free of cost.

The land rights certificates are issued jointly in the name of both spouses (in the case of married couples) or in the name of a single person (if the household is headed by a single person). As per the provisions of the act, the land rights certificate shall be acceptable as proof of address for all purposes. The land rights are provided in-situ as far as possible. However, the overall goal is not merely just to issue certificates of land rights to slum dwellers. Though a crucial task in itself, the project looks at land rights as an entry point for turning existing slums into livable habitats, while simultaneously enhancing the capacity of local governments to better address the challenges of urban poverty.

The land rights program was expanded with a mission called Jaga Mission or Odisha Liveable Habitat Mission, to bring about the transformation of existing slums into livable habitats with provision of all essential civic urban infrastructure including roads, drainage, sewage systems, community/public toilets, smart LED street lights, 24x7 piped water supply for households, common work sheds, parks, playgrounds etc.

After the passing of this act, the Odisha State Government has partnered with a local philanthropic organization, Tata Trusts, for technical and handholding support. Subsequently, Tata Trusts worked with a number of service providers to address specific technical needs; including Cadasta Foundation. With over a million people expected to benefit from the program, the Odisha Land Rights to Slum Dwellers program has already been claimed as the "world's largest slum land titling initiative." As of March 1, 2019, the project has delivered more than 50,000 titles with plans to expand the program to cover 250,000 households.

This paper will describe how Government of Odisha has been successfully implementing the land titling for the urban informal settlements adopting technology and transparent process with the slum community centric approach with the technological support of Tata Trusts. The paper will also describe how the project's community data collectors were trained to efficiently document land rights across Odisha's informal settlements. The paper will outline the process by which the data collected by community members was used to issue certificates of land tenure by the government land administration, as well as

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[1] Municipalities are medium towns with people ranging from 25,000 to 300,000
[2] NACs are smaller towns with people ranging from 10,000 to 25,000

provide an overview of how the data is managed by Cadasta. The paper will also explain the interface and sharing of experiences between the different stakeholders — including communities, local elected representatives, land administration, and civil society organizations — as well as the process for reporting the data to the government for issue of official occupancy certificates.

Land Tenure in Odisha State

In Odisha, land tenure security, both in rural as well as urban areas, is quite uneven. Despite progressive legislation efforts during past few decades, the state could not successfully complete the reform effort due to weak administrative capacities and a lack of updated land records. As per the Orissa[3] Survey and Settlement Act, 1958, the government is the absolute owner of all the land in Odisha state. A person enjoying rights to use a parcel of land is referred to as the 'occupant' as opposed to an owner.. However, occupants' rights to their land are not unlimited. There are two types of rights when using land in Odisha:

- Freehold Rights: Occupants enjoying freehold rights to their lands can sell/ transfer their properties without prior approval of government.
- Restricted Rights: Restricted tenure lands are lands where the government still has interest in the land (termed as unalienated lands). Occupants of these lands cannot carry out any transaction (transfer / sell / amalgamate / subdivide their lands) without the permission of the government. Odisha being home to several important Hindu temples, the government has allowed special legal provisions to administer the land. The government can lease out the land around the temples for example, but these lands are under restricted rights.

In the urban areas of the state, lack of land tenure is significantly higher within informal settlements or slums. The slums are either on government revenue land, private land, railway land, reserved forest land, temple land or land that is reserved for future facilities or road identified in the urban master plan. In most slums the status of land ownership is often unclear and ambiguous. The urban local bodies (ULBs) have no authority to resolve land issues, resulting in their inability to upgrade the infrastructure and facilities. Based on the data collected under Odisha Land Rights to Slum Dweller's Project, the following Figure shows the various type of land tenure arrangements in slums ranging from temporary occupation to freehold arrangement.

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[3] The State of Odisha was previously named Orissa, before a name change in 2011.
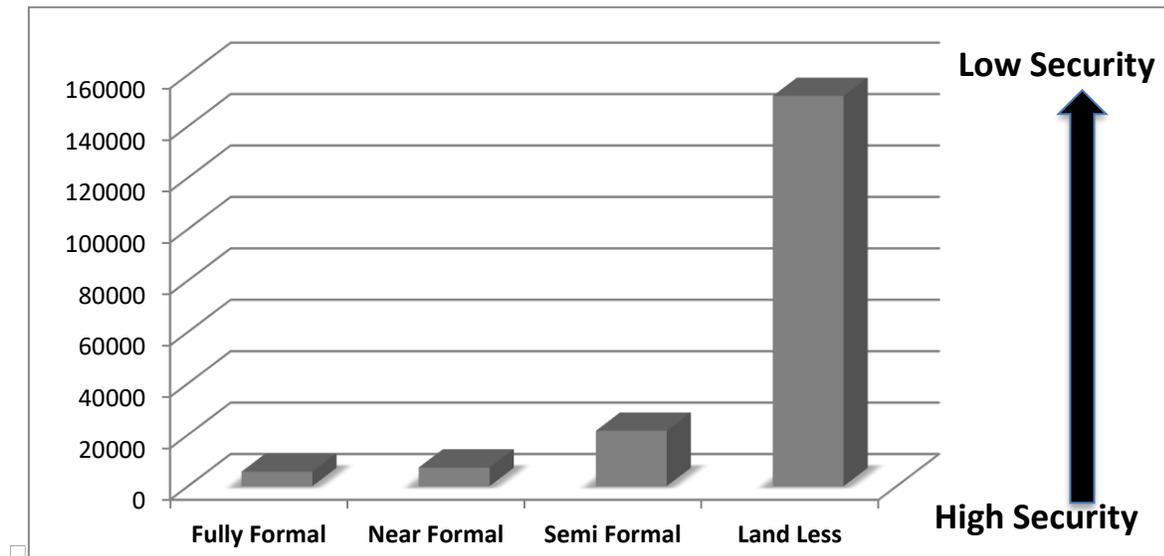
Figure 1 - Types of Land Tenure in Urban Slums of Odisha

Source: Odisha Land Rights to Slum Dweller's Project

The figure above demonstrates that in slums, households with fully formal land tenure are negligible in number. Additionally, the data shows that few people have near formal, or semi-formal land tenure. These two categories of households are having land records or documents, but their rights are not fully recognized because they do not have a document with final remarks. The category of semiformal land tenure means they have possession of land after informal transfer. This category also includes property transactions that are not legally recognized. The last category, landless, has the highest number people, who occupy land without any proof of possession. These landless households were those specifically targeted under the recent Odisha Land Rights to Slum Dwellers Act 2017.

Challenges to Formalization in Odisha State

After independence, the Government of Odisha passed several legislations to establish a comprehensive legal framework for land reform. The aim was to address historical injustice and the colonial exploitative system of land revenue assessment. Some of these acts included: the Estate Abolition Act 1952, Survey and Settlement Act 1958, Orissa Land Reforms (OLR) Act 1960, the Orissa Government Land Settlement (OGLS) Act 1962, the Orissa Consolidation of Holdings and Prevention of Fragmentation of Land (OCH&PFL) Act 1972, the Orissa Prevention of Land Encroachment (OPLE) Act 1972, Scheduled

Tribes and Other Forest Dwellers (Recognition of Forest Rights) Act 2006. Subsequently, some of these laws have been repealed while others have been amended in response to emerging requirements.

The National Land Record Modernisation Programme was implemented to update the management of the state land records. Almost all of the Record of Rights (RoR) have been computerized and are accessible via a website (at link http://ori.bhulekh.in). Additionally, the registration process has been updated and computerized, along with the digitization of cadastral maps. Eventually the maps will be uploaded for online access.

The state has all implemented strong laws to check different types of illegal land transactions, such as the transfer of land of Scheduled Tribes (STs) to nonmembers of the Scheduled Tribes group, which was banned. However, some ambiguities have been identified which makes it difficult to comply with the existing laws on the part of landowners. The Orissa Land Reform Act clearly earmarks the formal procedure to restore a piece of land occupied by a non-scheduled caste person from a scheduled caste person, however the state has yet to make substantial progress in terms protecting and recognizing the rights of tribal groups.

In urban areas, the volume of formal recording and mapping of individual lands is much lower than that of rural areas. This may be due to the inability of institutions to keep pace with faster land sub - divisions and transfers taking place in urban areas. Rights to private urban land, the transfer of ownership and the allocation of government land are carried out as defined by revenue laws and revenue master plan. Though one fourth of the urban population of Odisha lives in slums, despite state law providing settlement of land to urban landless, provisions for affordable/low cost housing, the rights of the slum dwellers have not been adequately recognized.

Both in urban and rural areas of Odisha, land records, which consist of various types of information (like maps, sale deeds), are maintained across different departments at the district or village level. These departments work in silos, and the data across each department is not properly updated to reflect changes made by other agencies; as a result, discrepancies are often noted in land records. In the past, surveys to update land records have not been undertaken, and maps have not been used to establish actual property boundaries on the ground. Therefore, in several records, the property documents do not match the position on the ground.

Poor land records can also affect overall confidence in the land administration system and serve to curtail future property transactions. It becomes difficult and cumbersome to access land records when data is spread across departments and has not been updated. One has to go back through several years of documentation, including manual records, to find any ownership claims on a piece of property. Such a process is inefficient and can cause delays.

Interim Steps to Formal Land Rights

It has often been noted that in situations with limited or conflicting land documentation, a high degree of land conflict, and/or a high degree of informality, that there is a need to develop alternative land and property rights recognition avenues outside the standard approach to freehold title or deeds. Land Administration and Urban development specialist Geoffrey Payne notes that we need a more flexible approach that "can take a variety of forms, from a simple moratorium on relocations and evictions, to temporary occupation licenses, communal or individual leases, community land trusts, communal ownership, customary tenure, etc." (Payne 2005).

These interim steps to formalization have been increasingly used in recent years, and represent a more "fit for purpose" approach to regularization that can be implemented more quickly and incrementally improved upon as demand requires. An incremental approach is particularly relevant in rapidly urbanizing areas, which if not addressed quickly by local governments, can quickly transform into slums. Once established, it becomes significantly more expensive to retrofit an informal community with government services, to say nothing of the cost and angst caused by relocating households as infrastructure needs to be installed.

Although citizens holding land informally suffer most acutely from a lack of recognized and secure land rights, they are not the only actors affected. The lack of information on land rights, property boundaries, and infrastructure is a constraint to economic development and security for public and private sectors alike. The basic identity conferred by recognizable street addresses is a boon to private sector actors looking to deliver goods and services, while governments benefit by having data that serves as the cornerstone for planning, infrastructure delivery, and revenue collection.

The rate at which most national land agencies are formalizing land rights cannot keep pace with the rate of urbanization in most emerging economies, resulting in growing informality in the housing sector.

Local governments face a critical data gap to adequately and equitably deliver basic services to informal settlements, such as clean water, sanitation facilities, and emergency services. Thus, when a fire breaks out in an unplanned community, disaster can occur, such as that in the Mirpur informal settlement of Dhaka, Bangladesh in March of 2018 when some 8000 dwelling units were lost before firefighters could control the blaze.

Global Examples of Incremental Formalization

There are various case studies of these intermediate steps in the land tenure process that move populations towards property rights recognition and a more sustainable livelihood – and which can be executed incrementally. There is the option to increase rights of residents while keeping the formal system in place, which is seen in Lesotho and Botswana with Certificates of Use, and condominium ownership in Southeast Asia (Payne 2000). In Manila, the government has utilized presidential land proclamations that guarantees squatter will not be evicted and can have access to government services (Porio 2004). One example where a "two-tracked" system exists is Phnom Phen, Cambodia, where an alternative system was created for informal settlements that the government wanted to upgrade (Payne 2005). The administrative system was not capable of handling the burden of regularizing these informal land occupancies and instead opted for a new system that would give specific informal settlements with long-term tenure potential, a temporary occupation license. This license would allow communities to stay, without threat of eviction. It was also agreed on, through a community driven approach that these selected informal settlements would be granted communal land rights, which would minimize the administrative strain for the Cambodian government.

For low-income informal settlement populations, a regularized formal property system is not always a priority and can even cause more hindrances for these specific communities, or actually increase land tenure insecurity. Some of the problems associated with a formal system can be the necessary fees to acquire the title, administrative barriers and lack of rights even with the proper documentation, or a skewing of property value and tax based on the formalization – which might "price out" the very residents the program intended to help. In Senegal, the government attempted to incrementally roll out a land tenure regularization program (Durand-Lasserve, Payne & Rakoi 2009). Evidence shows that a majority of the those that have started the process, have not finished it. Therefore, the perceived increase in land security to start the process is high enough to motivate these communities but the financial burden of finishing it can delay the process indefinitely.

Interim Documentation in Odisha State

The land legislation in Odisha, as well as India more broadly, has had the long-term objective of reforming the exploitative and iniquitous land system that existed during the colonial regime. Reforms were pushed forward by regulation of rent, and the de-concentration of land holding through the fixation of land ceilings. Although land tenure reforms are a national mandate, land was classified under the state list in the constitution, and thus states were allowed to pass laws on land rights issues in order to address local requirements. Odisha had the Slum Rehabilitation and Development Policy (SRDP) in 2011, which aimed to develop a slum-free Odisha by 2020 and improve conditions of urban poverty. This was to be done through upgrading all tenable settlements as far as possible, through tenure security, and by minimizing far-site relocation. The policy mentioned the incremental provision of tenure and basic services through the mainstreaming of slums, and maintaining a supply of formal and affordable rental housing options. The regularization policies were generally based on the delivery of individual freehold and, more rarely, for leasehold titles. However, harmonizing existing standards and procedures with the legal framework has constituted a major obstacle

To address issues of tenure security, Odisha has adopted an approach of incremental formal tenure regularization policies. It does not require the provision of freehold individual titles, although this is not excluded. Rather it combines protective administrative or legal measures against forced evictions – including the provision of titles that can be upgraded, if required – with the provision of basic services. One of the objectives here is to preserve the cohesion of beneficiary communities and protect them against market pressures during and, more importantly, after the tenure upgrading process. This approach must be understood as a first, but essential, step in an incremental process of tenure upgrading that can lead, at a later stage, to formal tenure regularization and the provision of full and unlimited rights.

During the last decade in most developing cities the common perception has been that property titles are the best if not the only way to ensure security of tenure. Such approaches have achieved limited results. When large-scale allocation of property titles to households living in informal settlements has been made possible, it has often resulted in increased pressure from the formal property market within the settlement, and an increase in the cost of services, both of which have tended to exclude the poorest sections of the population. Policies based on large-scale provision of land and housing by the public sector have proved to be ineffective in terms of reaching the poor. Some of the reasons are:

- Governments rarely have sufficient human and financial resources to operate on a large scale;

- Shifting from projects to programmes and then to policies remains a major problem; and

- Public–private partnerships in land and housing development cannot easily reach the poor unless heavy and well targeted subsidies can be provided (Payne 1999).

However, security of tenure is considered by many observers to be an inadequate response to the needs of households in irregular settlements when compared with tenure regularization (Urban Management Programme, 1989; USAID, 1991; World Bank, 1993; Ansari and von Einsiedel, 1998). In this case, freehold is considered the only reliable and sustainable guarantee that they will not be evicted (Durand-Lasserve, 2000). We would argue however, that incremental formalization of rights can occur in parallel to land regularization.

Overview of the Odisha State Liveable Habitat Program Pilot

Setting the Stage

As one of the major states of India, Odisha cover an area of about 156,000 sq.km and includes a population of over 41.9 million people. Within the state there are thirty (30) districts with a total urban population of nearly 7 million people (Government of India: 2012) living in 114 Urban Local Bodies (ULBs). As per the 2011 census, while the total growth over the decade was 13.97 percent, urban areas saw an increase in population of 26.8 percent. Much of this high urban growth rate is due to the migration of poor people from rural to urban areas in search of better livelihood opportunities. This in turn, contributes to the growth of informal settlements in urban areas. According to this 2011 census, 23.09 percent of the urban population of the state – almost 500,000 households - live in slums without any security of tenure.

The increasing low-income population creates high demand on the ULBs to provide housing and basic services. This unrealistic demand forces those without housing to occupy any open land available. This precarious living situation has a detrimental impact on their overall quality of life as without a certificate of residency, citizens are excluded from getting loans for starting businesses, constructing houses, accessing basic services or finding a formal job. Those without security of land tenure are often invisible in city planning processes. Although national policies frequently state that the government should provide water and sanitation services to all its citizens, in practice, the fulfillment of this policy is often impossible in informal communities in which the government has little data.

In the light of the above challenges, the Government of Odisha enacted a landmark legislation aimed at empowering slum dwellers in the state through land tenure security. The Odisha Land Rights to Slum Dwellers Act 2017, which came into force on August 10, 2017, to assign land rights to eligible slum dwellers for redevelopment, rehabilitation and up-grading of slums in the Notified Area Council (NAC) areas and municipalities. According to the law, up to 30 square meters of land will be allotted at no cost to slum dwellers from the Economically Weaker Section (EWS). In Odisha, any household with an annual household income of up to Rs. 1,80,000(USD S2530) is identified as EWS. The settlement is made for land occupation by the slum household with up to a maximum limit of 60 sqm in NACs and 45 sqm in municipalities. In cases where the slum is on untenable lands, the entire community will be moved to a new location, still within the core municipal area, and with each household receiving a land allocation of 30 sq m for each household. In the in-situ settlements, land occupied in excess of 30 sq m and upto the maximum limit is settled by charging an amount which is a percentage of Benchmark Value of land.

The mechanism for securing land rights is a new tenure type developed under the Odisha Land Rights to Slum Dwellers Act and is heritable but not transferable. The land may be mortgaged for the purpose of accessing loans and finances, but it can only be put to residential use. Livelihood activities taken up along with residence is also considered as residential use. The certificates are issued jointly in the name of both the spouses (in case of married couples) and in the name of a single person (in the case of households headed by a single person). The certificate is also acceptable as evidence for proof of address.

 Subsequent to enactment of the act, the state government reached out to the Tata Trusts (Trusts) – one of India's largest philanthropic organizations – for support in implementing the law. The Trusts is a 125-year-old philanthropy organization consisting of eighteen (18) charitable trusts setup by the founders and members of the Tata family. Given its vast body of work in the state in general and the state of Odisha in particular, the Trusts were the most obvious choice as partners in what was a pioneering and herculean task of providing land rights and transforming around 250,000 slum households into a livable habitat.

The initial pilot was implemented in nine ULBs of the state with the objective to field trial the processes and methodology and set out standard operating procedures through iterations for scaling up the implementation. The pilot implementation was initiated in one ULB of the Puri district (Konark NAC)

and eight ULBs in the Ganjam district (Chatrapur, Hinjalicut, Khallikote, Chikiti, Gopalpur, Digapahandi, Polasara & Kabisuryanagar NACs). The pilot developed standard operating procedures, define the scope of the work for different stakeholders, and analyzed the cost involved in executing different components.

A very thorough and innovative methodology arrived through constant brain storming was worked out during the pilot implementation. The activities in the pilot included:

I.   **Constitution of the Urban Area Slum Rehabilitation and Redevelopment Committee (UASRRC)** in each ULB, by the Odisha State Government through notification. The UASRRCs are headed by the district collector.

II. **Geo-fencing of the current slum boundaries using drones** – It was decided that drones would be used to capture high-resolution images of the slums, both for marking the external boundary of the slum and for detailed mapping of the slum itself.

III. **Integration of cadastral maps, Record of Rights (RoRs) and existing master plan** (if available) into a geographic information system (GIS) in order to overlay all known rights and data, and subsequent planning for development within the community. Following the imagery acquisition by drone, the technical agency integrated the imagery with the GIS data to create a community overview, for which a household survey data was later added.

IV. **Engagement of a local Non-Government Organisation** (NGO) by the ULB to mobilize the community and **form the Slum Dwellers Associations (SDA)** for each of the identified slums. It was decided that mobilisation and consensus building within the slum community could best be undertaken by local NGOs together with a body of the slum dwellers themselves. The SDA comprises every household of the slum and is responsible for making the final application for land rights within the community.

V.   **Door-to-door slum household survey, named "Urban Slum Household Area (USHA) – Survey"** by the SDA, with the help of the local NGO. In addition to capturing the basic profile of the slum dwellers, (biometric details, measurement of the land in actual occupation of the slum dwellers etc.), the NGO also helped the slum dwellers fill the claim/application form for recognition of their land rights.

VI. After the survey, the NGO facilitated the SDA in:
   a. conducting meetings with the members of the slum dwellers association;
   b. preparing the list of slum dwellers eligible for issue of land rights certificates;
   c. identifying the quantity of land to be settled with each slum dweller;

    d.   proposing and finalizing a plan for the new layout of the slum area, in the event of changes being required, within the boundaries of the slum fixed by the ULB;

    e.   inviting objections and suggestions to the proposed plan and arriving at a consensus; and

    f.   compiling the final plan and sharing with the Urban Area Slum Rehabilitation and Redevelopment Committee for vetting by the sub-committee before final approval.

VII.   **Constitution of a Scrutiny Sub-Committee by the UASRRC** for verifying the accuracy of the documents/plans and for computation of the land to be settled in favor of the respective slum dweller.

VIII.   **Presentation of final list of slum dwellers along with land settlement plan to the UASRRC for approval**. The committee approved the list of slum dwellers to be displayed at the notice board of the ULB along with other public places, for general information and for inviting objections and suggestions. In cases where objections/suggestions were received on the approved list of slum dwellers, the list was sent back to the SDA for reconsideration.

IX.   **Issuing Certificates of Land Rights** - If no further objections/suggestions were received, the UASRRC passed the final order and certificate of land rights are issued to the eligible slum dwellers.

At the conclusion of the pilot phase, around 2,200 households were given land rights certificates. The pattas were awarded to the households at a state event in the presence of the Chief Minister of the Odisha State and Mr. Ratan Tata, Chairman of The Tata Trusts. The event also marked the launch of the Odisha Liveable Habitat Mission called "Jaga". Along with patta, each household also got a letter from the Chief Minister assuring provision of basic services in their settlement. Importantly, formalization of these households allowed the families the access to financial assistance under the national housing scheme.

Key Learning from Pilot

The pilot largely established the need for greater coordination and collaboration between the local ULB and the state Revenue Department. Significantly, **capacity building of the stakeholders**, was recognized as a key aspect of the project that would need to be focused on in order to allow for a scaling up of the process. Both the implementation of the specific provisions of the Act (granting of land rights) and the overarching aim of the government (creation of inclusive cities) requires substantial capacity building at the levels of the state, districts and ULBs. The task at hand requires skills and expertise both in the areas of community participation and mobilization, and in the areas of spatial data collection and management.

It was observed during the pilot phase, that while the ULBs are strong in the areas of community mobilization and local knowledge (especially through Community Organizers – COs), they are severely lacking in the resources and skills required for spatial data management. This substantially impairs their ability to undertake spatial analysis and decision making

Networking with knowledge partners from the private sector has also been crucial to the success of the project. The involvement of technical partners for slum mapping and GIS related activities has already brought innovative techniques to the pilot implementation by combining hi-tech drone surveys with ground level physical verification of slum settlements by the NGO and SDA. Cadasta Foundation with its vast experience in the field of property rights have also contributed significantly through GIS based applications for collection and management of land information.

Additional learnings from the pilot that were later integrated into the project included an understanding that:

i. The ortho-images and maps prepared out of the drone images can provide measurements of the existing structures and individual property boundaries in many cases, in addition to being used for the identification of community boundaries;

ii. The physical measurement of each household boundary can help in validating the findings of the drone imagery;

iii. The Presence of the Urban Local Body (ULB) along with the technical service provider team is essential to identify the physical boundaries of the slums being surveyed;

iv. Collaboration with the Revenue Department is essential in understanding the status of land use and occupation, and for planning; and

v. The overwhelming majority of communities are cooperative, as they are hopeful to gain access to various government benefits upon receipt of the land rights certificates.

Based on the learnings from the pilot, the processes were scaled up to the rest of the state. To date, the drone surveys have been completed in all 109 ULBs covering 1886 slums, household surveys have been completed in 150,000 slum households and land rights given to more than 50,000 households. What has been very notable is the fact that the entire Liveable Habitat Mission has been a collaboration of the government with the slum communities supported by philanthropic organizations, technical agencies,

academic institutions and non-governmental organizations.

Project Partners

The foundation of this project is the collaborative effort of the government involving multiple stakeholders and partners. State Government, Urban Local Bodies, NGOs and Slum Dwellers Association are the main stakeholders for execution of the Land Rights Act and transformation of slums to livable habitats. Agencies like Tata Trusts, Cadasta Foundation and Omidyar Network with its vast experience in the field of property rights also contributed significantly through their resources, technology and knowledge sharing. This collaborative approach has resulted in synergy of strengths of various partners.

Housing and Urban Development Department, Government of Odisha State

The Housing & Urban Development Department is the nodal Department for the Government of Odisha responsible for ensuring proper and planned growth of cities and towns with adequate infrastructure, amenities and services provided to the citizens through the Urban Local Bodies and parastatal agencies. The department has been implementing various programs for efficient management & delivery of civic services like provision of affordable housing, safe drinking water, sanitation including solid waste management, storm water drainage, sewerage, roads, public transport; and creation of livelihood opportunities by accelerating economic growth of cities/towns and building capacity of the urban poor.

In the field, the Collector of the district heading the UASRRC which is the designated authority to approve land rights, District Urban Development Agency, Tahasildar and the Revenue Administration at Tahasil level, ULB functionaries – all play critical roles in the implementation of this LRC program and Jaga Mission.

Tata Trusts

The Tata Trusts are India's leading philanthropic organization and spreads over 17 states and 170 districts across the country, impacting the life and livelihoods of millions of households. Through grant-making, direct implementation and co-partnership strategies, the Trusts support and drive innovation in the areas of natural resources management; education; healthcare; urban poverty and livelihoods; media, arts, crafts and culture; and diversified employment. The Trusts engage with government bodies, international

agencies and like-minded private sector organizations, for individuals to nurture a self-sustaining eco-system that collectively works across all these areas.

The Trusts engagement in the urban space seeks to promote socially and environmentally sustainable habitats for urban poor to impact their quality of life. It focuses on addressing challenges related to housing, basic service needs like, water, sanitation, waste management, energy and livelihood improvement. Tata Trusts is partnering with Housing and Urban Development Department, Government of Odisha for providing technical and handholding support to Urban Local Bodies for implementation of Odisha Land Rights to Slum Dwellers Act and Rules 2017.

Cadasta Foundation

Founded in 2015, Cadasta develops and promotes the use of simple digital tools and technology to help partners efficiently document, analyze, store, and share critical land and resource rights information. By creating an accessible digital record of land, housing, and resource rights, we help empower individuals, organizations, communities, and governments with the information they need to make data-driven decisions and put vulnerable communities and their needs on the map. In this context, Cadasta works with a fit for purpose model, as a technical service provider of land expertise and technology for population living in informal settlement not served by the formal land systems. The Cadasta Platform offers communities, non-governmental organizations, governments, as well as businesses, affordable and open-access tools and technical assistance to improve the opportunities and quality of life through the provision of an open repository for collecting and managing data on land and resource rights.

Project Roll Out

Technical Process

In all stages of project execution, advanced technology was used for data collection, data management and human engagement in order to ensure a high degree of accuracy and transparency, a reduction of discrepancies and human dependency, and to allow for rapid execution. While imagery collection was done through Unmanned Aerial Vehicles (UAVs) more commonly called drones, field data collection was done through house to house survey by NGOs with applications using smartphones and tablets in conjunction with a web-based platform for data management, and project management was done through digital networking and common communication applications, such as WhatsApp. This is perhaps the first time that a combination of tools including UAVs, mobile applications and cloud technologies were

integrated in order to create high-resolution maps of slums in combination with a household database on such a large scale in India.

This project demonstrates that geospatial technology can create significant leverage in delivering land and property rights in multiple ways. First, high-resolution geospatial technology improves the fidelity of the mapping process. The drone maps generate very high resolution imagery which make it possible to identify objects as small as 2cm across. To put this in perspective, an equivalent image from Google Maps has a resolution of 50-60 cm in India – in a best-case scenario. While Google Maps are useful for general mapping purposes, for dense, haphazard, urban, informal settlements with boundaries which abut one another; higher resolution images are necessary to accurately map boundaries to reduce errors and decrease the chance of potential conflict. Similar resolution can also be achieved through other traditional surveying means such as Differential Global Positioning System (DGPS), which is an enhancement to GPS, or Total Station Survey (TSS), another alternative system of land mapping. However, drones were chosen because they are a much faster and cheaper alternative.

Second, the use of drones improves the efficiency of the process. In Odisha, over 197,000 households were mapped in less than three months. The drones used for the project can map 1.5 square km of land in six and a half hours, compared with a standard DGPS survey that would take about 32.5 hours and cost more than double for the same area. The efficiency brought in by the use of drones has proved to be a key enabler in this program which was targeted to be completed in 18 months

Third, technology promotes inclusivity for all. This is especially important since the legislation by design intends to position communities at the center of the process. Drones do not just map households faster, cheaper and more accurately, but the images generated provide a strong visual template of engagement for communities. In Odisha, active community engagement, was facilitated by the availability of very high-resolution imagery. This visual template adds a strong element of credibility to the process, as imagery is inherently relatable to community members, as opposed to a list of coordinates or a polygon created from traditional tools. The community's involvement in the process and the community consensus on the outcome of the survey process and entitlement details resulted in the land settlements with zero conflicts.

Community Engagement & Empowerment

All major cities in India are combating the issue of slums. The slum population has not been accounted for through inclusive planning and has remained under-privileged. The Land Rights program aims at recognizing the rights of the slums and slum dwellers, remove the fear of eviction and mobilize communities to make their own decision. Second, adopt a curative approach by upgrading the slums through physical improvement (street lighting, infrastructure for drainage and solid waste, etc.), social and economic empowerment measures, as well as addressing land tenure security in slums. Third, use preventive measures, such as affordable housing solutions, to discourage the establishment and growth of slums. It is expected that this three-pronged approach will greatly enhance the capacity of slum communities and cities to fulfill the needs of transforming slums in to livable habitats.

The implementation of the project started with community mobilization including continuous dialogues with slum dwellers, conducting door-to-door surveys, stickering and numbering of dwellings with the participation of slum dwellers. 1886 Slum Dwellers Associations (SDAs) were formed at slum level. These SDAs are responsible for resolving dispute (if any) between the slum residents, preparing list of eligible beneficiaries and a new slum layout plan with the help of NGOs and community organizers of the ULBs. Special attention was given to include women and people with disabilities as members and local leaders in the community mobilization and planning process.

Empowering Women

Various studies in the past two decades have underlined the fact that sustainable and long-term empowerment of women is largely dependent on equal rights in land and property ownership. (Agarwal 1997, 2002a; Baruah 2003; Basu and Rajan 2006; A. Sen 1999). Women's control over land and resources leads to ripple benefits for the entire family including better education and nutritional benefits for the family.

The rights and procedures established by the Odisha Land Rights to Slum Dwellers law established norms and processes that sought to not only give equal rights to women through joint ownership of land, but also sought their active participation in the process of allocation of land rights. The participatory processes were led by the Slum Dwellers' Associations, which are encouraged to have at least half of their members as women.

The observations from the implementation showed that women played proactive role in all the activities, as they saw the intervention as a form of tenure security, freedom from fear of evictions and upgradation

of their living standards. Also, the law brought social benefits for the family, such as schools for the children, access to formal credit, space for home-based livelihood activities, and better health conditions.

In terms of awareness and participation in the allocation of land rights, almost all the women were involved in the survey and mapping of the plots. They were proactive peer monitors and actively campaigned from among their community whose allocation of land rights were delayed.

Preliminary Results

As of writing (February 2019) the project is ongoing, with the distribution of land certificates well underway. While work continues, a number or preliminary results and observations can be extrapolated.

First, the project adopted a strong accountability framework during the execution of the project. The legislation is unique in its determination to provide services at for the beneficiaries and has a time frame. It was deliberately designed not to bring beneficiaries to government offices. It adopts a community-based approach with a focus on a delivery of services where in the ULB and NGO partners are visiting the slums and collecting household information. The project also used technology and partnership with different resource organization for efficient service delivery.

Second, a critical need to invest upfront on alignment and to create tighter management protocols. Given the novelty of the program, there is no existing template to ensure success. However, clarity in laying out roles, management structures, and creating standard operating processes in parallel will not only ensure a smoother process, but also serve as a potential program for other states to implement. The project has adopted a strong component of documenting and disseminating certificates.

Third, the project aims to promote sustainable development to ensure equitable supply of land, shelter and services at affordable prices to all sections of the urban poor. The Odisha Liveable Habitat Mission addresses urban poverty as a multi-dimensional issue faced by the poor in cities and towns and tries to comprehensively integrate occupational, residential and social needs.

Fourth, the Urban Local Bodies, NGOs and Slum Dwellers Association are the main stakeholders for execution of the Land Rights Act and transformation of slums into liveable habitats. It requires skill and expertise both in the areas of community participation and mobilization; and in the areas of spatial data collection and management. Networking with knowledge partners from the private sector is crucial to the success of the project. The involvement of private technical agencies for slum mapping and GIS related

activities has already brought innovative techniques by combining hi-tech drone surveys with ground level physical verification of slum settlements by the NGO and SDA.

The long term impact of the project is to support the Government of Odisha in the implementation of the "Odisha Land Rights to Slum Dwellers Act, 2017"; this can be considered as an entry point to realize the vision of transforming existing slums into liveable habitats and simultaneously enhance the capacity of state, district and local level government bodies to better address the challenges of urban poverty. As Odisha leads the way in becoming the first state to validate the need for future-forward technologies, such as drones and geospatial tools, in delivery and implementation of large-scale systemic programs such as land rights and liveable habitat, there are future collaboration for research and documenting the learnings from the project.

Conclusion

The Odisha land rights to slum dwellers initiative is unique not just in what it has embarked upon doing, but also in how it does it. The standard operating procedure developed for implementing the initiative involves a unique combination of the most state of the art technological interventions, such as high resolution mapping of slums using quadcopter drones, together with time tested participatory and community mobilization approaches using grassroots organizations and associations of slum dwellers. This combined approach was further applied iteratively, where the outputs of one phase of the exercise will become data for another phase. For example, the first set of drone maps was used by grassroots organizations as a base map for undertaking baseline surveys and community mobilization activities. The observations made by these organizations in the field was then shared back with the mapping agencies to further refine their maps and remove errors. The corrected maps were then used by grass-roots organizations to facilitate dialogue between the slum communities and the revenue and land administration departments.

It was this combined iterative process involving a mix of high technology and grass root level mobilization that made the overall initiative transparent and radically increased the speed of implementation. The state played both an affirmative and facilitative role by involving a wide range of organizations in the implementation process, such as non-governmental organizations (NGOs), philanthropic organizations, private sector service providers and academic and research institutions.

While multiple stakeholders were involved, the state ensured that each was allowed to contribute to the aspects of the initiative which best suited their specific strengths and approaches. The process for ensuring this had more similarities with the craft of an orchestra conductor, rather than of employing a rigid and inflexible standard operating procedure. Partnership with Tata Trusts, brought in not only their vast experience in developmental philanthropy, but also allowed the involvement of their own partners. This brought in resources and technology tools vital for the implementation of the initiative. The Department of Housing and Urban Development acted as an anchor for these multiple processes and stakeholders operating simultaneously, and ensured their synergy through a series of consultations and deliberations. In fact, the standard operating procedure for the initiative emerged out of this consultative and deliberative process.

Within a span of seven months after the start of the drone surveys, high resolution maps were prepared for all 2500 slums targeted by the initiative, making Odisha the first and only state in India to have detailed maps of all its slum settlements. Preparation of such a spatial dataset has enormous implications both for implementation of future urban poverty alleviation measures and research on quality of life in slum settlements. This is precisely what is allowing the initiative to roll forward in all urban local bodies of the state almost simultaneously.

As of writing (February 2019), distribution of over 52000 certificates of land rights has been completed. The process of implementation in all 109 towns and cities is in full swing.

The initiative had a strong accountability framework. The legislation is unique in its desire to provide the services to the beneficiaries at their door step and within a specific time frame. No beneficiary was required to visit any government office for any part of the initiative even once. The participatory and community centric processes which were put in place right at the start of the implementation process ensured consultation, clarification and resolution of conflicts at the level of the settlement. The creation of Slum Dwellers Associations (SDAs) in each slum, with the support of NGOs put in place a mechanism for institutionalizing the participatory processes. Although, these SDAs are a new institution, the very implementation of the initiative with their involvement is enhancing their capacity and gradually allowing them to take ownership of the initiative.

Numbers and tangible outputs can give us a sense of the achievements of large urban poverty alleviation, but they cannot convey to us the mystery and magic of true social change processes. While this paper is being written, the Nolia residents of the traditional fishing settlement of Nolia Sahi slum in Konark – long known as the most marginalized and deprived social groups in the state of Odisha – are in active consultation with Lord Norman Foster, one of the most iconic architects of our times in preparing a plan to transform the physical fabric of their settlement. Such historical moments of empowerment are perhaps the true goal of poverty alleviation interventions.

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