

Documenting Customary Land Rights in Zambia: A Low-Cost Open Source Approach

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1) INTRODUCTION

Zambia's 1995 Land Act vests land in the President and provides legal recognition of two categories of tenure: state and customary land. With the exception of relatively small areas of state land, largely located within urban municipalities and along historical railway lines, the majority of the country's 75.2 million hectares is administered largely through customary law by traditional authorities, which include over 250 chiefs and sub-chiefs, their advisors (*indunas*), and village headpersons (Chinene, Maimbo et al. 1998; Sitko, Chamberlin et al. 2014). Chiefs and headpersons have legally recognized authority over land administration in these areas through the Chiefs Act and Village Act, which date back to the 1960s and early 1970s. However, there is little guidance available for chiefs and headpersons on the specific responsibilities and limitations associated with this authority. Thus on the one hand, the Zambian state acknowledges (and even subsidizes) customary authority, but on the other hand state law provides no legal guidance or backing for customary rulings, including those related to land administration, because this is understood as being "beyond the state." Customary authority is therefore simultaneously an accepted, legitimate, and functioning part of state processes, while also operating largely without any documentation, rules, or legal support. As a result, while many of the land allocation and dispute resolution processes employed in chiefdoms represent broadly-accepted traditional customary practices, others are more or less based on ad hoc decision-making or the whims of leaders.

While most of this customary land is rural, there are also large populations of peri-urban settlers occupying varying sized plots, and millions of households and extended families farming agricultural fields on customary land at the periphery of the state lands that dominate Zambia's municipalities and cities. At this peri-urban intersection, state land administered by municipalities and cities under leasehold from the Ministry of Lands, Natural Resource and Environmental Protection (MLNREP) borders customary land that is ostensibly managed by customary authorities, although chiefs' roles and authorities are often limited in these peri-urban areas.

In addition to urban municipalities and a historical corridor of state land along rail lines, the state administers leasehold titles within chiefdoms on land (farms, mining concessions, and other uses) that has gone through the process of "conversion" under the 1995 Lands Act from customary tenure to leasehold tenure. Conversion of land is based on consent from both the local traditional authority and the district council and is a one-way process: leasehold tenure does not revert back to customary tenure, nor can leaseholds be canceled due to lack of follow-through with provisions of initial agreements¹. This one-way process of conversion has caused a great deal of concern from chiefs who feel their customary land is being expropriated from under them. Additionally, over recent years, the government, in cooperation with chiefs, has

¹ Once land is converted, the leasehold contract is between the Commissioner of Lands (on behalf of the President) on one hand, and the lessee on the other. The chief is not a party.

established large 100,000+ hectare agricultural blocks under leasehold tenure in each province to encourage large-scale agricultural investments alongside thousands of smallholder farmers to be provided with leasehold title.

A major limitation of this dual tenure system is that the two systems have limited ability to communicate with one another. Despite a national population of over 14.5 million people, the Ministry of Lands has only approximately 140,000 leasehold titles within its information system, housed in the capital of Lusaka. In contrast, traditional leaders have historically used oral records and, in some cases, written notes to allocate land. Boundaries between land under leasehold titles and land under customary tenure are often ambiguous, despite legal requirements for the use of beacons and general plans and diagrams.

The 1995 Land Act has broadened the divide between state and customary land. Although it mainly addresses state land administration, it has a significant impact on customary land administration by its very omission of details on how customary land is to be administered. It does so in the following ways (Tucker, 2014):

- Firstly, the hierarchy between state and customary land is intensified because state land is protected by legislation and is accepted as collateral by lending institutions. In contrast, customary land remains unprotected by legislation, subject to ad hoc administration, and undocumented land allocations are unrecognized by lending institutions.
- Second, by ushering in a land market in the mid-1990s, the Act led to continual increases in land values and demand for land. Neither is inherently negative; however, only the market value of state land is recognized. Officially, customary land is still not supposed to be sold. Consequently, for land to have market value it must first be converted to state land.
- Thirdly, by acknowledging that chiefs hold land in trust, but without a definition of what that means in a practical sense, the Act leaves the role of the chief open to interpretation.
- Fourthly, by requiring only the signature of the chief, without broader community consultation, to convert customary land to statutory, the Act contributes to an environment that encourages non-transparent land transactions, subject to corruption and alienation without consultation.

A number of emerging national and global trends are also placing pressure on customary land in Zambia. As across much of Africa, large-scale land acquisitions for global agricultural commodities are being promoted by government and investors as development opportunities on “idle” land. Zambia’s dual tenure system, with limited clarity on consultation requirements for current residents of customary land, has created a narrative of land conflict between chiefs and government within the local media. In some cases, traditional authorities are accused of “selling” land to investors without local community or government consent, while in other cases government and local councils have been accused of allocating land in both customary and state land as a form of political patronage and personal gain. In addition to global investment pressures, primarily around mining but also in some cases agricultural commodities, there has been a new trend focused on “emergent” farmers and speculative land acquisition from urban

Zambians, who acquire large pieces of peri-urban customary land at little to no price (Jayne et al., 2015).

At the same time, as pressure to commercialize land in Zambia builds, there has been increased interest from government, traditional authorities, and local stakeholders to protect the rights of stakeholders, while encouraging development. There are a number of interventions that can be taken to strengthen household rights in the face of these pressures, including legislation that recognizes customary land rights at the same level as statutory rights (Knight, 2010), clear procedures for stakeholder consultation and consent around investment or conversions that affect their historical rights, and application of compensation and resettlement policies. Alongside the legal recognition of customary land rights in rural settings and the rights of settlers in urban and peri-urban environments, the subsequent systematic documentation of these rights is an attractive intervention for government, traditional authorities, and households alike. This paper documents the development and piloting of a systematic process of identifying customary landholdings within four chiefdoms of Zambia's Eastern Province. This work has been carried out through U.S. Agency for International Development (USAID) support to a local Zambian civil society organization, the Chipata District Land Alliance (CDLA), and chiefdoms, with technical guidance on process, data management and administration, and project management from a small team of international consultants.

The common narrative for the need for land documentation focuses on protecting the rights of families in the face of outside investment or land grabs (Deininger, Byerlee, Lindsay, Selod, & Stickler, 2010); protecting the rights of orphans and widows (Holden et al. 2011); clarifying boundary disputes (Deininger, 2003); incentivizing productivity-enhancing investments, (Deininger and Jin, 2006); and, allowing households to access collateral and services (Besley 1995; Feder and Nishio, 1998). Population growth and access to land for rural and urban youth to escape poverty also present compelling reasons to clarify land allocation and administration, though it is important to note that the state does not necessarily allocate more fairly or effectively than traditional authorities (Jayne et al., 2015). This is particularly important in Zambia, where customary land is not permitted to be "sold" or "rented," though chiefs and village headpersons traditionally receive a small gift based on the ability of the claimant to pay. The tendency toward larger gifts for allocation of larger pieces of land has been part of the discourse around the illegal selling of land.

Within government, land documentation is attractive as it provides an important basis for current and future revenue through ground rents and property transfer tax, as well as for urban and rural planning purposes through identification of areas that may be suitable for future investment (USAID, 2014). Unsurprisingly, this also represents the biggest fear and reluctance of traditional authorities and local communities to register land. Each of these factors plays a role in Zambia's emerging efforts to pursue systematic land documentation and have been highlighted in USAID's support to varying degrees based on the stakeholders present.

Chiefs also increasingly recognize that they cannot effectively administer their territories without updated records and access to spatial tools. Meanwhile, communities, families, and households are unaware of their rights and frequently have no documentation to support their claims in the

face of pressures from neighbors, chiefs, government, or outside investors. Several chiefs have been working with civil society to explore options for customary land certification, which would give households, chiefs, and communities documentation of customary rights to land, as well as increase transparency in land allocation and management. The USAID-supported work builds on this initial experience of chiefs with customary land documentation.

The potential scale of land documentation in Zambia is enormous. Estimates of the number of landholdings in the country vary from 12 million to 30 million individual parcels. The government has launched a land policy development process with a central focus on harmonizing customary and state land under a unified system. The government has also launched a multi-year program to undertake a Land Audit of all state and customary land and an associated National Land Titling Program to systematically register land rights across the country, though the methodologies for these processes are still under development.

Zambia's dual tenure system provides some unique opportunities and challenges to systematic registration. On the one hand, the current structure of legally recognized and socially legitimate traditional authorities presents an opportunity to build on existing structures both for the process of registration and, crucially, the longer-term administration of land. On the other hand, the lack of historical communication and sharing of information between the state system and traditional authorities poses a significant challenge to overcome, as state engagement on land issues is typically restricted to the provincial capitals or even the national capital where MLNREP's records are stored. It is this underlying long-term relationship between the traditional authorities and government that will define the success of efforts to systematically document land rights in Zambia.

As noted above, this paper presents and qualitatively assesses a pilot to develop a replicable, systematic land registration process that can feed into a sustainable land administration system. The approach seeks to be consistent with existing capacities and legislation but flexible enough to evolve with and inform current discussions in Zambia on potential future legal and institutional frameworks. This process focuses on rural, largely agricultural, land but is adaptable to game management areas as well as peri-urban and urban chiefdoms. The paper is structured in the following sections: 2) the development of the pilot registration, focusing on principles, tools, and process in relation to the current customs and legal framework; 3) lessons from the initial field experiences; and, 4) conclusions for sustainability and replicability.

2) PRINCIPLES, TOOLS AND PROCESS OF CUSTOMARY LAND REGISTRATION

2a) DEVELOPMENT OF PRINCIPLES

Over recent years, there has been a general convergence amongst government, civil society organizations (CSOs), and some traditional authorities in Zambia on the need for more consistent records on customary land allocation. Since 2012, civil society partners of the Zambian Land Alliance have experimented with support to traditional authorities to deliver what they initially referred to as traditional landholding certificates to communities. Over the same time period, members from the Ministry of Lands have also participated in study tours to countries like Rwanda that have carried out large-scale land registration processes. There were significant limitations to some of the initial efforts of CSOs to support the chiefs: first, the certificates

lacked any spatial description of the certified land, and – perhaps more importantly – there was little focus on, and no consistent approach to, the longer-term administration of the certificates. Government study tours revealed great enthusiasm for the Rwanda model but also a recognition that Zambia has a similar population to Rwanda but covers 11 times the land area and also retains a strong and legally recognized institution of traditional authorities. USAID’s support has sought to help both CSOs and government work with customary authorities to develop a low-cost, locally appropriate process.

Beginning in December 2013, this process focused on a series of consultations with government, CSOs, and academics, as well as with chiefs and indunas, to identify a set of principles, with explicit trade-offs, to guide the methodology development. Replicability and sustainability are two overarching objectives that inform the principles outlined below. Replicability is largely focused on whether the costs, capacities, and tools associated with the certification methodology are at a level that others in Zambia (and potentially beyond) can apply, while sustainability refers to the institutional structures and relationships that support the longer-term administration of the information relating to these customary rights. In the final analysis, a right is only as strong as the institution behind it (Meinzen-Dick & Pradhan, 2001).

Low-cost: Documenting landholdings requires that the registration process is available to each household or community that desires to make a claim. The need to ensure that the process is inclusive and spatially explicit, and incorporates sufficient safeguards and provisions for objections and corrections, poses enormous logistical (and subsequently cost) challenges, particularly when much of the landscape is relatively inaccessible by roads, communication networks, or electricity. This suggests that a variety of approaches and levels of detail of registration will be required for different contexts (urban, peri-urban, agricultural, or sparsely inhabited rural land). With perhaps more than 15 million parcels of household land to register, even an extremely low unit cost of \$10 per parcel represents a huge investment. All decisions on the process design considered the objective of minimizing costs.

General Boundaries rather than Fixed Boundary Approach: In the Zambian context, stakeholders agreed on the importance of ensuring that the registration process includes a spatial description of boundaries. The current Zambian legal framework requires a high degree of precision for all boundary documentation, which is not attainable through the USAID-supported process. While customary land administration does not prohibit the use of maps and drawings that emerge from the USAID-supported process, in order for the process to be recognized by the government there will have to be a relaxing of current precision requirements and an acceptance of “general boundaries” (Harwood, 1996). This concept, which is based on the provision that a boundary exists in the general area described on the map, even though the map and land registry do not show defined/fixed boundaries, is increasingly being applied in developing country contexts, where there is limited capacity to maintain fixed boundaries. Additionally, as in Rwanda, local para surveyors with minimal training will likely need to be deployed to document the volume of land necessary at a low cost. The acceptance of these principles in Zambia’s Survey Act and Deeds and Registry Act will allow for land registration to occur at the scale required under a national land title program.

Awareness-raising and for Corrections and Objections: A systematic process registering thousands of properties simultaneously and relatively quickly is susceptible to mistakes and potential gaming of the system by individuals with more information and greater accessibility to the process. As a result, community members need to be provided with consistent, comprehensive, and accessible information before the process starts and to be given the chance to raise objections or highlight necessary corrections to either ownership records or boundaries before the certification process is finalized.

Registering Household and Communal Rights: The systematic registration process in Zambia, to date, has focused largely on household land rights registration. However, in order to register household rights and the associated institutions (headpersons and chiefs) who have allocation and administration responsibilities over household land, there is a need to document local village boundaries, as well as chiefdom boundaries. At present, villages are registered as points across Zambia's landscape, but given that headpersons have responsibilities in land allocation, it is important that the boundaries of their influence are mapped, particularly since village to village conflicts are among the most common forms of disputes. Additionally, both custom and law recognize communal land use types, including seasonal wetlands, graveyards, and areas reserved for future expansion. It is equally important to recognize that these areas are not mutually exclusive, for example household and communal rights may overlap, as households may have seasonal rights to cultivate in specific areas of wetland gardens, and many household fields may be used as community grazing areas in the off-season.

Locally Legitimate and Inclusive: Given the existence of strong institutions with customary roles in allocating and administering land rights, it has been important to work through the chiefdom structures, particularly since there is no current national legal framework guiding this process. Additionally, the process has been implemented by local CSOs with existing relationships within each chiefdom. Based on this, there is a need to clearly identify the customary practices that communities have used to manage land that have social legitimacy as opposed to the practices that are carried out but not necessarily grounded in custom.

At the same time, the process sought to increase representation within customary land institutions of all stakeholders, in particular women and other marginalized groups, by developing roles for broader sections of the community than would traditionally be engaged in land issues. Village Land Committees (VLCs) were established to support the registration process, and the participation of women, men, and youth was encouraged at each stage of the process. Simply reminding communities that women could participate in boundary walks resulted in a substantial increase in their engagement in the process. This approach reflects a balance of retaining local legitimacy and supporting customary systems while creating space for adoption of international best practices of transparency and inclusiveness.

Transparent: The process seeks to increase transparency in land administration by ensuring that witnesses, including neighbors and VLC members and/or headmen, are part of all registration and claims processes; that neighboring communities have the opportunity to participate in the establishment of community boundaries; and, that community members have the opportunity to review each product before finalization. The proposed land administration system places all of

the village's digital records in the hands of each community through low-cost Java-enabled feature phones.

Flexible: The flexibility in the process seeks to address two issues. First, the process needs to embrace the fact that customary norms differ across Zambia. Some of this variation is related to predominant land uses, such as pastoralism, groups that predominantly live in structured villages versus farmsteads, and chiefdoms on the periphery of municipalities. Other elements of customary flexibility may recognize inheritance differences between matrilineal and patrilineal tribes or a tendency to hold land as a family or clan and not necessarily as individual households. Over time, these customary norms may continue to evolve, and it will be important for the customary land registration system to be able to adapt to changes. Secondly, flexibility is integrated into the process to allow for adaptation to the emerging policy framework in Zambia. Depending on the evolution of the Land Policy and the National Land Titling Program, the tools and approach can largely be adapted.

Documenting Existing Rights: Based on significant discussions among stakeholders, the registration process was developed to document current rights and not explicitly attempt to redistribute rights to minority groups or vulnerable populations, which would need to be based on long-term social changes. There was also a recognition that forcing social change, for example by redistributing land to women and/or youth, could place vulnerable groups at greater risk of losing their land when challenged and/or of reprisals by entrenched interests (Koenig, Ahmed, Hossain, & Mozumder, 2003; Oduro, Deere, & Catanzarite, 2012). Rather, the structure of the land registration and administration sought to provide space for such social changes to be easily registered and/or amended in the future. For example, co-registration of the rights of wives and documentation of children for the purpose of inheritance in the village registers were encouraged, and public awareness-raising included explicit messages around the need to register the rights of women, including widows.

Mirror-principle between Written Registers and Digital Database: Recognizing the need for village, chiefdom, and government institutions to have the same information, the process relies both on paper records to be kept at the village level, as well as digital records to be stored on a cloud server accessible by community members, chiefs, and government. It is the functioning of this system that will be most important for making sure that long-term administration is possible.

Build on Local Capacity for Registration and Administration: Following from the mirror-principle, a current weakness of Zambia's land administration system is that applications and registrations are centralized in Lusaka. While decentralization will presumably bring these services to each district, community members are not likely to make multiple trips to district municipalities to change ownership or add persons to certificates. Therefore, the customary process provides chiefs with the tools to process applications and certification requests within the chiefdom. Additionally, it relies on para-surveyors hired from within the chiefdom to support the initial registration process and to provide ongoing mapping support alongside the VLCs, which are charged with keeping up the village register. To the extent possible, members from within each community are responsible for the establishment and upkeep of the village register. As part of this principle, the data collected always remains with the local community. When village maps are developed as part of orientation, the maps are left in the community, with community

facilitators simply taking photos of the products. At each stage, when new products, including interim maps, are brought to the community, they are left, as part of a process to build local ownership of the data and resources.

Consistent with Government and Customary Land Registration Systems: While the process of customary land registration will require some changes to legal requirements for surveys and in authorizing individuals to engage in survey-related activities, it attempts to provide information that is consistent with government sketch maps, as well as with chiefdom-level norms. The process and information included on certificates was revised based on a government study tour during the early stages of land registration.

Building the approach on these principles helped lead to the development of a simple but comprehensive system for long-term, socially legitimate, and spatially explicit data management.

2b) TOOLS

In order to achieve the goals of cost-effectiveness and flexibility and to promote the long-term sustainability of registration and subsequent administration, the process is built entirely on open source software, using low-cost devices and easily customizable applications. This reduces the need for licensing costs, though it does require someone who is adept at troubleshooting and testing new forms. Data was collected in the field on Android tablets and smartphones that were connected via Bluetooth to over-the-counter GPS units. Solar charging stations of a battery with USB ports were shared among every 3-4 para-surveyors and community facilitators while in the field.

A range of open source software was used in the field and office, including Geo Open Data Kit (GeoODK) for field data collection, and OpenOffice, PostgreSQL, and QGIS for data management and GIS mapping. QGIS application for tablets was also explored toward the end of the pilot collection period as a data collection tool. While the use of photos of boundaries and features of interest was trialed early in the process, it was ultimately limited during the most data intensive field steps as it presented challenges in terms of sending data from the field via GSM to the cloud server.

A Java-enabled open source database software for low-cost feature phones, DHIS2, is currently being trialed for the ongoing administration of the customary certificate system, providing a tool for the VLCs to send requests to change, delete, or add new information to parcels in their village. This system is used heavily by community health workers across Zambia to track activities at community health centers. A partnership with a Zambian global health implementer, AKROS, has allowed for building bridges between land and health information tools. Cloud servers associated with Open Data Kit (ODK) and DHIS2 have supported data aggregation, while a server at the CDLA office is used to house the spatial database, in part due to inconsistent connectivity in the provincial capital of Chipata. In the long term, each chiefdom will be provided with a printer and GSM-enabled Android tablet to allow them to communicate with the CDLA office and to print certificates themselves.

2c) CUSTOMARY LAND REGISTRATION PROCESS

The registration process is built around the customary jurisdiction of the chiefdom. Chiefdom boundaries are recorded in a pre-independence 1958 map that is commonly recognized to be out-of-date and lacks any narrative or beacons (markers on the ground). As a result, the process supports efforts to further clarify chiefdom boundaries, to the extent possible given the inherent political sensitivity, while focusing on clarification of village boundaries, which are effectively the functional units of customary land governance on a day-to-day basis.²

Chiefdom and village boundaries do not align with other administrative boundaries, such as districts and wards, which may pose challenges to longer-term administrative responsibilities. The registration process is divided into two phases: the first associated with documenting village boundaries and shared resources, as well as resolving conflicts, and the second associated with systematically registering the parcels of land by households or families.

PHASE 1: VILLAGE BOUNDARIES AND SHARED RESOURCES

Step 1: Communicate Goals and Objectives. Establishing clear communications with traditional authorities and their advisors is crucial, as the customary land certificate process will highlight conflicts that require the active engagement of traditional leaders. In particular, the process should identify all of the recognized villages within the chiefdom through one or more meetings. As advisors traditionally do not speak in the presence of chiefs, it is important to provide opportunities for them to engage independently with the villages and chiefdom maps. Early consultations are used to identify existing ambiguities and conflicts and instill ownership over the process amongst the traditional leaders and communities themselves, with the CSO staff acting merely as facilitators. Communication products at this stage seek to clarify the roles of those involved in the process, as well as to stave off any potential misconceptions about the legal status of the certificate, for example that it does not allow individuals to sell land, and is not a leasehold title. These messages will have to be adapted as the legal framework develops. In this outreach phase, progressive elements of allowing for certification of spouses are highlighted, though it is important to keep these as options and not force individuals into a particular form of documentation as discussed above.

During this early phase, community para-surveyors are identified in each chiefdom based on a numeracy and map-reading test. These para-surveyors are then hired and trained through an experiential learning process that imparted skills in the use of the devices while shadowing the CSO staff. This mentorship process allows for the incremental development of skills so that the para-surveyors were ready for independent work by the time of household land registration.

Step 2: Support Local-Level Land Governance Institutions. Community/village level institutions are necessary to support every step of the process, with village-level ownership over the process the only guarantee for long-term sustainability. In the first two meetings, VLCs are

² The Zambian High Court implicitly confirmed that village headmen/headwomen, as well as chiefs, perform control and regulation functions in land use and acquisition in their ruling on *Mwiinda v. Gwaba* (1974). In planning discussions with stakeholders, it was determined that headmen/headwomen are empowered to make most village-level land administration decisions on behalf of the chief, including allocating land and resolving local land-related conflicts. In addition, these discussions noted the critical land rights knowledge of headpersons, *indunas*, and elders. As such, the pilot was designed to primarily target the village, and the households within, as the unit of intervention.

established or grafted onto existing village institutions to support village headpersons to carry out their work. These VLCs seek to increase transparency in the allocation and administration of land. Additionally, during this step of discussing land governance issues within the community, the community facilitators begin to collect information on the resources that the community uses both within and outside of the village boundaries.

A series of VLC meetings within each chiefdom were used to bring together the land committee leaders to 1) document the customary rules that govern land use in the villages, as well as 2) identify and address existing boundary conflicts, and 3) identify chiefdom-level communal resources. These meetings also introduce the VLC leaders to the tools that they and CSO facilitators would use in the documentation and administration process.

Step 3: Document and Validate Jurisdictions & Communal Resources. *Zambian villages do not have registered boundaries, yet village headpersons have government-mandated land administration roles. Building on the verbal discussions of local land governance and administration customs, the first meeting with each village focuses on documenting current practices and on mapping village and communal resource boundaries, initially freehand. This step is particularly important to document boundaries both through a hand-drawn map and verbal descriptions. The engagement of neighboring communities is important in this process. This first meeting relies on the drawing of village maps in different interest groups, particularly by gender, but also often by age. After the initial maps are drawn and presented back to the community, facilitators ask questions to better understand where boundaries are clearly defined or where they may be “fuzzy.” The documentation of conflicts is important at this stage. Like all meetings with this process, the maps are left in the community and only a photo is taken back to the CSO office.*

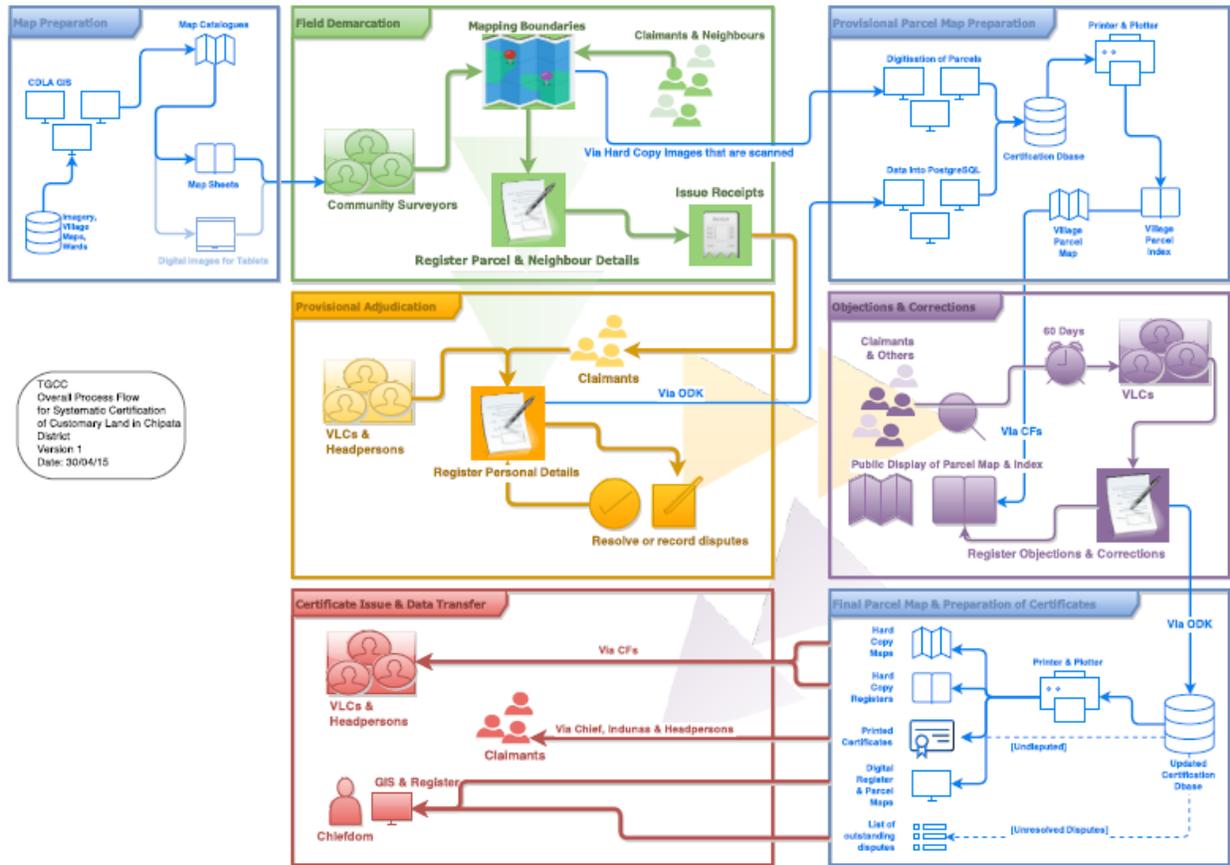
Following the drawing of village maps, community facilitators return to the village within a few weeks to carry out a participatory walk of the village boundaries. This walk involves both a GPS-enabled tablet, using GeoODK to collect data points, as well as a high-resolution satellite/aerial image of the general area scaled to be printed on A3 paper upon which features and communal resources within and outside of the village can be drawn. In the preparation of boundary walks, it is important to get a sense for whether the boundaries are contiguous or whether there may be multiple non-connected village areas. Additionally, the engagement of women and neighboring community members is encouraged during this step, all of which are documented through the GeoODK. As boundary points are taken, additional information is collected within the village, such as a place of interest (e.g. cemeteries), or boundaries that are physical features. To the extent possible, chiefs’ advisors, *indunas*, participate in the boundary walks.

Using a combination of the hand-drawn maps, boundary lines drawn on the aerial images, and the GPS points, a GIS technician from the local CSO creates an initial village map that includes boundaries, points of interest, and communal resources (either shared within the village or among multiple villages). These maps are also compared with any additional historical records of land use or land allocation that may be present in public records, for example official topographical maps and information from MLNREP on state lands and farms within the

district/chiefdoms. Overlaps between areas claimed by two villages are mapped as disputes, as are areas that are identified as disputed during the boundary walks. Communal resources include information on which villages have access to the resource of interest.

These initial maps are then printed at A1 size and brought back to the communities for validation. In particular, overlaps with neighboring villages that may be a point of conflict and the extent of communal resources that extend into household fields are vetted with the community. Changes are documented in an ODK form with an associated photograph of the resolved map. In addition to maps of individual villages, the overall chiefdom map, consisting of a map of all village locations, is also brought to the chief and the indunas to consider. The chiefs are then encouraged to send indunas to resolve the individual conflicts that appear on the maps. In cases where there is unallocated land outside the boundaries of individual villages, indunas, chiefs and other local experts classify the current uses of the land.

In the future, the boundaries of communal forests, wetlands, and pastoral areas are expected to be registered formally with government registry systems; modalities for the registration of communal customary lands is not yet clear. Additionally, there is presently no mechanism to register village boundaries or to update chiefdom boundaries based on these bottom-up processes. Developing such mechanisms will be critical, since across much of rural Zambia these first steps of mapping village and communal boundaries may be adequate to secure the rights of local communities in the face of future investments or outside interests. Importantly, the administration of this data is likely to be much easier in the long term than the administration of household data.



Process Diagram of Household Land Documentation

PHASE 2: SYSTEMATIC HOUSEHOLD LAND DOCUMENTATION

Step 4: Communicate Household Documentation Process. Prior to launching field documentation, extensive outreach and education must be carried out to inform community members of the process for documenting land. Local partners have employed theater groups, cartoons, and community visits, and future work will additionally employ radio. Two of the most important messages are for individuals to resolve conflicts prior to demarcation and for people to understand the role of joint landholders and persons of interest (POIs, e.g. individuals who may inherit the land). Encouraging community members to reach out more broadly to family members who may live outside of the village is also important. This communication builds on the communal resource and village boundary documentation. Because the customary land certificates have no formal legal status in Zambia, this stage is used to describe the uses and limitations of the certificate, including that traditional authorities retain the rights to give certificates and, in the case of misuse, retract the certificates, and that the certificates cannot be sold or rented.

Certificates and the associated digital registry include two types of persons: landholders and persons of interest. The concept of joint landholders was also explored in the piloting, though was ultimately merged with the landholder. Initially, joint landholders were limited to a single individual (presumably a spouse). However, it soon became clear that a significant number of

properties were in fact family land where multiple siblings or members of an extended families had equal rights to the land. Persons of interest were described to community members as anyone who has an interest in the land for the purposes of inheritance. There were ultimately no limits placed on the numbers of landholders or persons of interest that could be affiliated with a claim to land.

Prior to the field demarcation of household land, basemaps with village and jurisdictional boundaries are required at a scale where fields can be easily identified and demarcated based on printed imagery. To develop these basemaps, a grid of 500 m east to west and 300 m north to south is laid across the entire chiefdom. This grid allowed for the printing of 1:1750 mapsheets for each of the villages in the chiefdom, representing a set of village mapsheets that compose a village index map. These maps include identification codes for the chiefdom, village, ward, and mapsheet, which ultimately became part of each parcel's unique parcel number (UPN).

Step 5: Register Field Boundaries and Household Claims. Field work is based on a two-step field demarcation and claims process, where each parcel of land is visited by a community para-surveyor with a parcel owner or their representative, along with neighbors and a VLC representative and/or headperson, followed by a village claims stage, where information is entered into a village register by the VLC members. All of this information is collected simultaneously in digital form on an Android tablet. The boundary demarcation and village claims process takes between five and twenty-one days in each village, depending on the village size. Teams of two to six community para-surveyors participate in each village, though smaller teams are generally more productive than larger teams because community members have been hesitant to break up and register multiple different areas of a village at a time.

On the first day of field demarcation, the community facilitators call a village meeting to describe the demarcation process. During this process, it is explained that any person with land in the village can go to their fields with the para-surveyors, neighbors (witnesses), and a VLC representative or headperson to draw or walk the boundaries of their land parcel. The para-surveyors underscore that land that has existing conflicts will not be demarcated, and that it has to be demarcated in the presence of one of the owners (i.e. a village headperson or a VLC member could not claim land on behalf of others in the village).

Field Demarcation: In the field, the para-surveyor uses the GeoODK tool to identify their location on the map and then works with the community members to describe the boundaries of a claimant's parcel. Where the boundaries can be easily identified on the map, they are drawn in freehand. Where the boundaries are unclear due to bushes, forest cover, or boundaries that lack physical features, GPS points are taken.

A single GPS point is taken within each parcel, which improves the ability of digitizers to ensure that the parcel was drawn correctly. Additional field information collected during field demarcation includes whether the claimant in the field is also the landholder (or a relative/renter), as well as whether the land has any conflicts/disputes on it, and whether it overlaps with a shared resource. The names of the witnesses are also collected, to demonstrate that the work is documenting the views of the community and not the views of the para-surveyor.

Based on the drawing on the map, the para-surveyor ascribes a unique parcel identification number composed of unique numbers associated with:

- Chieftdom;
- Village;
- Ward;
- Mapsheet; and,
- Consecutive parcel numbers per mapsheet.

These identification numbers are then used to create the unique parcel number. This parcel number and the associated receipt produced in the field become the receipt for the claimant or landholder to use at each subsequent step in the process.

Village Claims: Following the field demarcation work, a village land register is opened in each community to document each of the landholdings in the village and the associated landholders, persons of interest, and other basic characteristics of the land. Each claimant/landholder must come to the village land register with the receipt generated in the field to document the details of the people associated with the land, as well as basic information on whether the land is household land or shared family land. These details, as entered into the village register by the VLC, are subsequently captured in digital form using the ODK tool.

Following the completion of the demarcation and claims phase, the marked-up mapsheets are brought back to the GIS team, and the digital data from the village claims and the demarcation process are uploaded to a server for integration into the GIS database. The GIS team then digitizes the full set of mapsheets associated with each village and raises any issues (e.g. discrepancies, conflicts) that are initially apparent.

Step 6: Objections and Corrections Process. Once all the chieftdom data has been digitized and the claims and demarcations integrated into the database, a series of data quality checks are performed to identify potential misspellings in the records, duplicate parcel numbers, and other data entry and analysis errors. Based on this dataset, large-format maps in A0 are produced alongside a list of landholders and persons of interest. Each map is attached to plywood and brought to the village to seek feedback and validation. The map highlights demarcations from the field that were never entered into the village registry, parcels that overlap with shared resource areas, and parcels that overlap with unresolved land disputes. Additional clarification is sought on each of these parcels during the objections and corrections phase.

The maps are then left in each village for an initial period of thirty to forty-five days, during which the VLC and community members have the opportunity to identify any corrections to the map, identify new parcels that may not have been registered during the first phase, and add, correct, or delete names and personal details from the village land register. Additionally, formal objections to any claim can also be made during this step; these must be resolved prior to final certification. Changes to the register may be made in red ink at this point. If community members are in agreement with the status of their claim at this point, they sign or enter their thumbprint in the village land register as confirmation. At this stage, the VLC will also sign off on the receipt that was provided during the field demarcation. If spatial corrections are required,

the VLC will send a request through the DHIS2 feature phone form. Para-surveyors then return to each village to support map corrections.

After an additional ten to fifteen days, the para-surveyors return to each village to collect any corrections through ODK, based on a review of the village land register. For certification to proceed, each parcel needs to be actively confirmed by the VLC, local community, and claimant (e.g., the absence of an objection does not lead automatically to certification). Additionally, any parcel that has an overlap with a shared resource or a dispute will require additional consideration by the VLC to document whether the dispute is ongoing and therefore certification cannot proceed, or if boundaries of a shared resource or parcel may need to be altered.

Step 8: Certificate Delivery. Once the objections and corrections period is completed, the dataset is finalized and is used to generate certificates through QGIS composer. The certificate includes information on the name of the landholder and persons of interest, their national registration numbers, and their years of birth. A parcel map is included with a list of a selection of coordinates. The back of the certificates includes information on the chiefdom and the conditions associated with the certificate in both English and local language (Nyanja/Chewa).

Given the volume of printing of the initial certificate run, they are produced by the CSO partner for the chief. However, a printer and tablet computer will be provided to each chiefdom to support corrections and future administration of the certificates. In the future, chiefs will be able to print off certificates from their palace.

Step 9: Ongoing Administration. While still in its early stages, the chief's dataset will be a mirror of the data held by the CSO. Each VLC will use their community feature phone to provide monthly land updates, for example whether any new community members have joined, whether any land holders have left, and whether there have been new parcels allocated or divided. Based on these monthly updates, the VLC will receive a small communication incentive of approximately \$1.50 per month through the USAID program but longer-term revenue considerations will be a focus of upcoming work. Based on the answers to these monthly questions, specific requests for adding names, transferring certificates, or establishing new certificates can be made. The requests reach chiefs and CSOs simultaneously. Initially, the official editable database will stay in the provincial capital, and chiefs and communities will have a copy that is updated quarterly. Continued engagement of each community will be required to ensure ongoing upkeep and to help the system adapt to any necessary changes. Between April 2016 and January 2018, support will be provided to ensure that the local CSO provides the VLCs with backstopping. During this time as well, options for upkeep of the system will be explored, for example helping chiefs identify appropriate charges for the services associated with updating certificates or reprinting in the event of loss. It will be important to monitor how often the certificates are updated or require additional input from the VLCs and chiefdom institutions to determine what level of effort is needed to maintain the system in the long term.

In addition to financial sustainability, the potential integration of the customary land certificates with government systems, and the most suitable locale for storing data in the long term, will also

continue to be explored, as government considers using a similar methodology for the National Land Titling Program.

3 FIELD TESTING AND LESSONS LEARNED FOR SUSTAINABILITY AND REPLICABILITY

The methodology was tested in 134 villages in four rural agricultural chiefdoms in Chipata District of Eastern Zambia. Because the activity was part of a randomized control trial, only approximately half of the villages in each chiefdom received the certification treatment. This led to some unique challenges associated with logistics and field work and ruled out a number of activities which could have leveraged significant economies of scale. The pilot cannot therefore be used to estimate the required level of effort or costs for a chiefdom-wide roll-out of the methodology. Nevertheless, the existing experiential lessons can inform future roll-out of the methodology. This section considers the methodological challenges alongside legal, political, and social challenges that will influence the long-term viability of the process in Zambia.

Personnel and Training: In addition to management and data/GIS team members, the initial field team included eight CSO facilitators with post-secondary school degrees and experience in community organizing. This group led the village boundary documentation and shared resource mapping process. Once the field demarcation process started, an additional eight facilitators were hired alongside twenty-four community para-surveyors who were recruited directly from the chiefdoms. With this full team, an intensive two-week training course was carried out to help build the skills of these team members in the use of technologies, data collection tools, mapping approaches, processes, and facilitation skills. Those surveyors and facilitators who were not able to perform by themselves following these two weeks continued to shadow experienced community facilitators until they demonstrated proficiency. While the methodology was documented fully within a Field Operations Manual (TGCC, 2015), this mentorship approach was invaluable for imparting and strengthening the skills of the para-surveyors.

The use of the community para-surveyors was invaluable to the process. It brought legitimacy to the work, as they could explain the purpose of the work to reluctant communities, and also built a body of capacity that rests within the chiefdom. Approximately 50% of the surveyors are expected to move on outside of the chiefdom to pursue post-secondary studies or find urban jobs, while the other 50% are expected to stay in the chiefdom. Despite these benefits, in the future, the use of community members needs to be approached with additional care and quality control.

The work was carried out by a team of 40 facilitators and community surveyors who were allocated among 16 villages during any given week. Initially, the size of the team was based on the size of the villages, both in terms of population and area. However, it soon became clear that putting more manpower in a large village was not a sustainable solution, as communities tended to want to register a single parcel at a time, and they were reluctant to break into multiple groups. As a result, spending more time in a single village is a more effective approach than placing more people in a village to promote its completion. Maximum team sizes of 4-5 individuals also ensured clear coordination, as villages with larger teams had difficulty sharing mapsheets effectively.

Additionally, training efforts initially focused on the process and the use of the tools, like Bluetooth GPS, tablets, and software like GeoODK. However, early experience demonstrated that building capacity in reading maps is the most important skill to transfer. Early in the pilot, offline base maps were loaded into the GeoODK, which allowed facilitators and surveyors to isolate locations and mapsheets with more certainty, and this increased accuracy significantly.

VLCs are also susceptible to the same limitations that face most village structures that are mandated by law. The responsibilities of the committees are not always clear; they often lack adequate resources, training, or capacities to carry out their roles; and, the needs for a committee may be relatively infrequent, resulting in committees going defunct. Additionally, community members often lack incentives to take up the roles. This is no different in the villages under this program. Some of the villages are little more than three or four households or an extended family, where a committee would seem unnecessary. In future iterations, it is likely that villages will be aggregated into units and land committees will be formed from multiple neighboring villages.

Field Mapping: The mapping process in both the village and household phases merged the use of digital mapping technologies and drawing on paper maps and imagery. Paper maps proved valuable as they were easy for people to interact with en masse and for groups to work together to discuss disputed boundaries. Additionally, the paper maps could be left in the village after each meeting, with any lessons simply captured by camera on a smartphone. At the village level, these large paper maps will likely remain central to the process.

With respect to household-level mapping, the use of paper maps was more mixed. Parcels tended to be much larger than was initially estimated from the visible boundaries on the imagery and as a result a single landholding would often cover 3-4 mapsheets. Drawing the features of a boundary on multiple mapsheets proved to be a challenge and often led to confusion if these marked-up mapsheets did not line up correctly. Toward the end of the pilot, the team began to experiment with GeoODK drawing and point features on top of imagery. On the one hand, direct digitization in the field may reduce some errors associated with the digitization and allow the claimant to see the parcel boundaries as they will appear in the database. On the other hand, the method in GeoODK is less precise than when parcels are digitized in QGIS in an office environment. The next trial will likely still use paper maps, but perhaps with field digitization occurring during the field work by the team of facilitators/surveyors in each village. The scale of the paper maps will also need to be adjusted to a more appropriate scale, such as 1:3,500.

The flexible use of drawing boundaries where boundaries were clear and using boundary walks with GPS points for fuzzy or unclear (from a map) boundaries proved largely successful between the data team and the field demarcation teams. The GIS team was responsible for digitizing whatever was drawn on the paper, except where there were boundary points, and in these cases the boundary points took precedence. This occasionally caused challenges where boundary points intersect with drawn lines dozens of meters away from where one would expect the intersection. At present, there is no simple way in the methodology to account for this; though, in the future, the objections and corrections maps may be improved by allowing for space to document where the digitization process lacks clarity.

Repeated Visits to Villages: At least six visits (including one prolonged stay) are required in each village. Frequent visits to villages pose significant logistical challenges, as a relatively high proportion of meetings/visits have to be abandoned after they have been scheduled due to a funeral, the absence of the village headman, or other reasons. The high costs associated with transport mean that this is not a sustainable solution and the future engagement of the para-surveyors from the beginning of the process may reduce the number of missed opportunities. Additionally, while the vast majority of the villages and parcels may be registered with no issues, the 5% or so of parcels with challenges, such as boundary disputes or lacking claimants, inevitably take the majority of the time to resolve. At present, these cases are being channeled into a separate conflict mediation process to allow the clear cases to continue, but one can imagine that as time progresses the systematic consideration of these challenging cases will occupy a significant proportion of the local CSO's time.

Registration of Customary Rights and their Relationship to Policy: Given the lack of a clear legal framework for registering rights on customary land, there were a number of lessons learned in the process on the nature of rights that are being registered, which will have to be clarified if the program is ever scaled. First, the program design initially focused on household rights, and assumed that each visible parcel would be registered by a household head or jointly by a household head and spouse. In fact, many people preferred to register significantly larger holdings of "family land," comprising several contiguous parcels, each farmed and managed by different households from within the extended family. Because the program initially envisaged the registration of a single joint landholder (assumed to be a spouse), some of these families preferred to register such holdings in the name of a dead father/mother and named all of the living children as persons of interest. In other cases, para-surveyors initially and mistakenly asked a claimant who their spouse was and then wrote that person's name as a joint landholder, rather than posing the question to the claimants. This approach has the potential to undermine the rights of siblings of the claimant, who in many cases would inherit the family land according to prevailing custom in the area. In this case, the initial attempt to ensure that spouses' rights were adequately considered in the process led to the potential weakening of rights held by others in the family. As a result, provision for registering family landholdings was integrated into the process, and the option for registering multiple (i.e. more than two) joint landholders was introduced, representing different social arrangements for joint landholders.

In terms of village and shared resource rights, there are currently no clear methods to document these boundaries or to register rights associated with a community. The continuous nature of many shared resources, in that a village's rights to a pastoral area or wetland diminishes as the distance from the village gets greater, poses challenges in drawing clear boundaries of villages as rights holders of these shared resources. There are provisions expected to emerge in the regulations to the Forest Act of 2015 on registering community forests, and the draft land policy foresees both the public recognition of villages as civic authorities and mechanisms to register pastoral land and wetlands. However, the draft land policy foresees pastoral areas and wetlands becoming "public lands," which raises additional challenges to the rights of villages to manage and use these resources.

Village registration also faces challenges associated with the non-contiguous nature of some parcels claimed by village members and the “checkerboard” nature of parcels belonging to different villages. In the first instance, many villages have placed their settlements next to roads, but the lands claimed by the community members may be located over a mountain or several kilometers away, adjacent to a wetland. In fact, approximately 30% of communities have two or more blocks of land that are understood to be under the administration of their village headperson. Similarly, with respect to “checkerboard” villages, in a number of cases communities may have a long history of allocating land within a common resource, such as a forest shared among several villages. By the time the forest is cleared, land has been allocated in non-contiguous patches among multiple villages. The long-term administration of these non-contiguous villages could pose challenges without clear delineation of village jurisdictional boundaries.

Many households were hesitant to register their parcels of land under separate villages, and instead insisted on registering their land only within “their” home village, even if a parcel was well inside the recognized boundaries of another village. This insistence is related to the local customary tax structure to fund traditional ceremonies, where a village headperson collects a contribution based on the ability of individuals to pay. Households may thus be asked to face contribution liabilities in neighboring villages. Additionally, headpersons have a social role in representing/supporting their community members, and upholding an individual’s land rights. Therefore, households may want their land to be registered under the headperson who protects their rights, and may feel their tenure security is decreased by registering land under a neighboring community.

Data Administration and Connectivity: Phone connectivity and the cost of data transmission pose a challenge both to the registration process and to longer-term administration. The GeoODK tool and DHIS2 rely generally on phone reception to send and receive data. The initial boundary walk methodology relied on numerous photos from each walk being collected. Poor reception meant that uploading these data forms using the mobile network was prohibitively expensive and time consuming. Additionally, during the household registration phase, tablets that did not have mobile phone reception were used due to their lower costs. As the methodology is used more broadly, options for low-cost, GSM-enabled tablets will need to be explored, and photos will either need to be compressed or removed from the process.

As a pilot process, the certification methodology and the formats of the various data collection tools were developed in an iterative fashion, with modifications made during the process. In terms of adjusting the methodology to local realities, this obviously proved to be a benefit, but it also introduced additional challenges because of the resulting discrepancies in the type of data that was collected amongst the various chiefdoms. This significantly increased the amount of time and costs in data management and normalization. For any future roll-out at scale, it will be important to discuss with government and chiefs so that there is firm agreement on the format and content of the data collection tools and the database schema prior to their deployment.

The replicability of the work also relies on the interests of other organizations to take on the methodology and to support the longer-term administration. The initial registration of rights is

the most attractive from a funding and programmatic perspective, but building the capacity of village institutions to manage and work with the data to keep the administration alive is the largest challenge. This requires a plan for support to a gradual transfer of responsibilities to appropriate local authorities, whether customary or formal, which relies on a more nuanced approach than a step-by-step methodology.

The proposed administration process with the data in its current form relies on an official spatial database resting with the CSO in the provincial capital of Chipata, with each chiefdom having a mirror copy of the database updated once a quarter. This PostgreSQL database will be accessed through the QGIS software both on the CSO computers and the associated tablet computer that will be left in each chiefdom. The QGIS platform will be used to print updated certificates.

A mirror copy will also rest on the DHIS2 server that each of the VLCs can access. The VLCs will be able to search records and provide any updates from the village on land-related issues, including deaths of landholders, new claimants, new allocations and divisions of existing parcels using basic mobile phones. These requests will be sent directly to the provincial capital, scheduling a work order associated with other trips to the chiefdom. As a result, basic mobile phones will allow villages to communicate with the chiefs and with the CSO to keep land issues on the top of the radar.

A select group of 2-4 para-surveyors will be hired from each chiefdom on an as-needed basis. They will support the VLCs to make sure that they are reporting updates periodically and in making updates to their village registers. Over time, the viability of this system will be assessed. As the process is expanded to additional chiefdoms, the options to support a group of VLCs in one region may provide further opportunities for economies of scale to be introduced.

Applicability to other Areas of Zambia: The potential for the methodology to scale nationally is important in the context of the Zambian government's proposed National Land Titling Program. The approach is certainly applicable to other agricultural-based rural chiefdoms and, indeed, other chiefdoms have been asking to learn about the activities in Chipata District. Remote rural chiefdoms, particularly those around national parks and game management areas, present significant new challenges due to the great distances and low population densities associated with the chiefdoms. As a result, the household documentation may be relatively simple, but the practicalities of carrying out village boundary walks will be more complicated.

Urban communities can adopt elements of the methodology as well. However, issues around persons of interest and appropriate public spaces to carry out the objections and corrections process may pose challenges. Additionally, since urban spaces have a series and history of overlapping legal rights, negotiating the occupancy permits and short-term leases that people may have in urban state land may require a different set of questions. Peri-urban communities pose a similar set of challenges. Since many of these communities are still formally in customary areas and most would lack any legal documentation, opportunities for securing tenure in the context of continuing urbanization abound. In both urban and peri-urban areas, the scale, accuracy, and precision of the measuring devices become particularly important.

More effort will be needed to adapt a certification process for implementation in peri-urban areas, as well as in extremely rural chiefdoms, while staying relevant with the development of land policy in Zambia and helping to inform principles and methods of large-scale deployment. Indeed, Huairou Commission is facilitating a certification process similar to the one described above through local CSOs in a peri-urban chiefdom near Lusaka with support from UN Habitat.

Jurisdictional and Policy Issues: The question of jurisdictional boundaries and the appropriate location for data to be housed presents a long-term challenge that may be addressed through a land policy and subsequent legislation. While decentralization has the stated objective of bringing land administration data to the level of the district, chiefdom boundaries (and subsequently village boundaries) are not restricted to individual districts. This overlap will present long-term challenges for housing and administering data in the long term. At the same time, district boundaries are not very well understood, including the recently established new districts across the country. As existing customary jurisdictions are not well aligned with formal administrative jurisdictions, it may be appropriate in the upcoming land audit process to develop new ward and district boundaries based on the customarily-recognized village and chiefdom boundaries. Such a bottom-up approach is likely to be the most feasible way to promote the integration of customary and state systems for land management.

The process carried out under this pilot is largely consistent with recent policy and legislation trajectories. The most recent draft of the national land policy was released in November 2015, and customary land registration through a national land titling process has been at the center of each of the drafts under consideration. While initial discussions aimed to have a single title for leasehold and customary land tenure systems, the policy context has increasingly recognized the need for leasehold titles to be distinct from customary titles.

The role of chiefs and traditional authorities in future land administration is one of the central questions facing Zambia as it considers a land policy. A land policy and subsequent administration system that wishes to engage with individual households and communities must define how customary authorities, ideally complemented by locally-elected committees within chiefdoms to increase accountability and representation, will be able to coordinate with district or national land administration systems. Chiefs have noted that they carry out their duties related to law enforcement and land administration with little to no support from government. If Zambia wishes to formally integrate these systems, there will need to be clear roles, responsibilities, accountability, and strategies to incorporate existing customary authorities – which retain considerable social legitimacy and political power – into the formal land administration, while also safeguarding the rights of women, youth, minorities, and other groups whose rights may be inadequately upheld by either formal or customary systems at present.

One current challenge facing this definition of roles is the constant struggle over chiefdom succession. There are a number of chiefdoms across Zambia with contested chiefs based on historical disagreement and infighting. The government must formally recognize each new chief; this recognition has been fraught with long-running court battles. Recent efforts by government to incentivize chiefs with a monthly stipend have reportedly increased the conflicts over succession. One could expect that if chiefs are given further responsibilities and compensation,

these conflicts may emerge to an even greater extent. While chiefs are prohibited from engaging in the national political process, there is also a danger that if the institution is brought into a formal government role, it will be harder to keep the chief role apolitical.

While generally supportive of customary land certification, community members have expressed reservations over certification for fear that it may lead to taxation of customary land. Indeed, increased tax revenue is an explicit goal of government land policy development efforts. However, the policy also recognizes that rural smallholders have limited resources to pay ground tax, and policy drafts have been explicit about providing tax relief to individuals who have hardship in paying taxes. The government has also presented thoughts on decentralizing tax collection to the local level within chiefdoms and allowing chiefdom institutions to retain a portion of the taxes collected. The draft land policy has also indicated an interest in allowing customary land to be sold to Zambians, associated with a property transfer tax. There has been an assumption that this would open up access to collateral for small-scale farmers, though the evidence around the world on this is mixed (Lawry, Samii, Hall, Leopold, Honby, & Mtero 2014).

4) CONCLUSIONS ON SUSTAINABILITY AND REPLICABILITY

The pilot process for carrying out systematic household land registration in Zambia is possible to implement at scale, but there is a need to ensure that jurisdictions are clarified to some degree prior to large-scale household-level registration. In the pilot, village and chiefdom boundaries were clarified where possible, and documentation of other boundaries of shared resources was seen as important to the process. In many cases, the documentation of village and chiefdom boundaries may be more important than household-level documentation, as it is more cost-effective than certifying individual parcels (Deininger, 2003) and is crucial to underpin the effective and locally legitimate land administration required to uphold land rights in the long term.

Moreover, the challenges facing customary authorities and the management of customary land differ dramatically between peri-urban chiefdoms, rural agricultural chiefdoms, and much more rural chiefdoms that include game management areas and large swaths of “bush.” The open-access mobile technologies deployed both for data collection and data management purposes have proved to be effective for the process, but would need to be further refined for longer-term use (including, for example, the development of simplified front-end user interfaces). USAID and partners will continue to explore these options over the coming years to develop a system that works for local authorities, community members, and government alike.

From a legal perspective, the draft land policy is likely to recognize customary and statutory rights as equal and create a basis for formally registering household rights. These reforms would remove a considerable bias against customary rights while introducing a potentially important mechanism to strengthen customary rights without converting them into existing statutory forms of tenure. While these anticipated policy reforms are welcome, there will still be a need to amend existing survey, deed, and registry laws to allow for diverse customary land rights to be formally

registered, and including the recognition of the role of para-surveyors and the adoption of a general boundaries approach.

Moreover, in the absence of a fully-functioning formal land administration system, there is also likely to be an ongoing need for customary authorities, together with elected community representatives, to provide land administration services in customary land areas. As such, there will be a need to clarify the respective roles and responsibilities of government, customary authorities, and community representatives in customary land administration.

Given the chiefs' historical distrust of government interventions on land issues, the use of local CSOs and trusted intermediaries may be particularly important in the land registration process. Furthermore, this pilot has demonstrated that community para-surveyors can effectively carry out land registration steps with basic oversight and support from local organizations. Strong data management skills and project management support are, however, necessary to ensure that the activity is carried out effectively in a systematic process, particularly when the data collection process is undertaken by local community para-surveyors.

In the long term, the most important indicator of success will be the extent of sustained and effective land administration at the village, chiefdom and district level. At present, land administration remains largely centralized within the MLNREP, and there is no formal government authority below the district government supporting land administration. As decentralization proceeds in Zambia and land administration continues to be devolved to provincial and district governments, there will be further need to clarify the respective roles and responsibilities of various land administration institutions, both formal and formal, at all jurisdictional levels. In the short term, this is primarily a political question on the roles and relationship of customary authorities with district and national government. In particular, resistance to the open sharing of data among government and customary authorities may be a significant hurdle to overcome.

Having a tested approach to manage the transfer of customary land certificates, changes in the names on certificates, and adding/combining new certificates is essential prior to launching a national registration program to ensure that there is a chance for the system to be sustainable following the initial delivery of certificates. The complexity of effectively managing changes to the land registry are illustrated by the case of Rwanda, whose Land Tenure Regularization process has been considered as a model by the government of Zambia. A recent USAID-supported study found that while over 94% of respondents were familiar with the procedures required to register different kinds of land transactions, only 42% had actually used the formal land administration to do so (Biraro et al., 2015). This study identified a number of potential barriers, including fees that represent over half the average monthly salary, distance to the nearest land office responsible for registering transactions, and illiteracy, that are likely to be very relevant to the Zambian context as well.

Moreover, it will be important to understand the demand for certification itself. A recent household survey associated with an independent impact evaluation of this pilot found that 80% of households reported they would like to obtain a customary land certificate for the fields they

use (Persha, et al., 2015). The fact that some 20% of Rwandan landholders have not elected to collect their certificates also suggests that actual demand for registration may not be universal, which could further undermine user incentives for updating the system with changes in rights (DFID, 2015).

Scaling the registration process will also require enormous financial outlays that are not likely to be easily recouped through fees and/or taxation in the short term. The high cost of acquiring satellite imagery, which was provided by the U.S. government free of charge to this pilot,³ is likely to be one of the largest barriers to large-scale deployment of this approach. This may be addressed to some extent by the formal adoption of the general boundary principle, which would allow for parcels to be spatially identified using lower cost sources of imagery without precise linkages to the geodetic network. In the context of this USAID-supported pilot, there are no fees for initial registration or updating of customary land certificates. In the long term, however, there will be a need to determine landholders' willingness to pay for changes in their registration and/or ground rents (property taxes) that could be used at least in part to maintain the system.

Furthermore, any large-scale deployment will have to work to reduce corruption and the risk of elite capture that is associated with the documentation of large areas of rural land (Meinzen-Dick and Mwangi, 2009). It will be particularly important to ensure that systematic registration does not negatively affect the rights of the most vulnerable, such as women, migrants, pastoralists, and the poor. Their claims to land may be weaker than other stakeholders given current customs, and they may be less well equipped to participate in the process in terms of literacy and overall empowerment. Evidence from Kenya and elsewhere indicates the importance of addressing these risks up front to avoid disenfranchising anyone, particularly the most vulnerable (Meinzen-Dick and Mwangi, 2009; Lawry et al., 2014).

In conclusion, this pilot has demonstrated that a low-cost, locally legitimate process for demarcating village lands and registering customary land rights to agricultural fields can be implemented in Zambia's rural agricultural landscape using community para-surveyors, high resolution satellite imagery, open source software, and mobile technologies. This pilot specifically illustrates the value of working with customary authorities, together with trusted civil society representatives and representative village institutions, to build local capacity and ensure that the outcomes of the process are both legitimate for the claimants and recognized by the customary authorities, who retain most land administration functions over the vast majority of Zambia's land mass. The early lessons from this pilot, which are also being tested through a rigorous experimental impact evaluation, could be particularly informative as the government of Zambia considers a draft Land Policy and embarks on an ambitious National Titling Program to register all land in the country. Still, significant effort will be required to ensure that a national systematic titling campaign can achieve its stated objectives while protecting the rights of the

³ The NextView contract allows United States government institutions to access unclassified commercial high-resolution satellite data and share this data with non-governmental organizations, state and local governments, intergovernmental agencies, universities, and foreign governments provided that the use is in support of U.S. government interests. For more information, please visit <http://cad4nasa.gsfc.nasa.gov/>.

most vulnerable in the short term and building a sustainable land administration system in the long term.

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